A study of the arguments for the increased vocationalization of Sudanese secondary education

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A STUDY OF THE ARGUMENTS FOR THE INCREASED VOCATIONALIZATION OF SUDANESE SECONDARY EDUCATION

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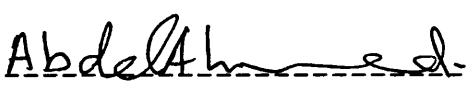

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ABSTRACT

This research is an attempt to provide a foundation for tackling the problems which hinder the development of technical and vocational education (TVE) in the Sudan from achieving its objectives.

Questionnaires and interviews were used for collecting data relating to these issues. Questionnaires were distributed to a sample of 700 students (403 males and 297 females) and 176 teachers (100 males and 76 females) randomly selected from 13 secondary schools; and to 48 (male) higher education staff members. Interviews were conducted with 10 parents, 4 officials representing the Ministry of Education.

Chi-square and t-test were used to analyse data.

The finding from this study revealed that:

1. Students, teachers, and parents have positive views of TVE. However, parents advised their children against studying TVE courses.
2. No difference was found between male and female views of TVE.
3. Significance differences were found in views of TVE between students from different age groups, vocational aspiration, and type of curriculum followed by students.

The results obtained from this research suggest that:

1. The reluctance of students to study TVE courses is not due to their low views of TVE, but is due to other reasons.

2. The existing secondary school system is the main cause of the high rate of unemployment among secondary school leavers and the shortage of skilled people in the labour market.

3. The incorporation of TVE in the secondary school curriculum will make a contribution in the reduction of the high rate of unemployment among secondary school leavers and in the economic development.

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CHAPTER ONE
INTRODUCTION

Secondary education in the Sudan was reformed in 1991. Until then, technical and vocational education (TVE) had constituted a separate type of school from academic courses of study. According to the National Comprehensive Planning (1991) all streams have been offered in the same school to form a multi-stream (Comprehensive) school.

TVE is a very important source of supply of skilled people for the Sudan's labour market and a key aspect of its national development, but no systematic research has been carried out to investigate the problems which hinder TVE from achieving its objectives. This research is an attempt to provide a foundation for addressing these problems, from which policy indicator or further studies might be considered.

1.1. The problem

Despite recommendations presented by a number of national educational commissions about changes to the structure and organisation of the TVE curriculum, and to the objectives and policies in order to improve the effectiveness of the Sudanese secondary education system, many problems and developmental issues remain. These problems hinder the objective of preparing a well qualified and appropriately trained workforce to meet the increased economic development needs of the Sudan as a developing country. As stated by Al-Amin (1986) and Abu Shanab (1992), it is clear that the shortage of skilled and semi-skilled people in the Sudanese

workforce was one of the main factors preventing the realisation of the objectives of a number of development plans.

Depending on the pilot study and the review of the literature the researcher believes that the following might be reasons underpinning this factor:

1. Historically there has been an apparent reluctance among students to enrol in TVE programmes in school. (see Chapter 2, p.25 and 28). Traditionally, a higher status has been given to academic studies than to TVE. An academic education has been considered as prestigious leading to higher education, whereas TVE has been considered as low status education leading to so called 'blue-collar' jobs. Thus schools with an academic emphasis have been attractive to both higher ability and ambitious students.

2. There is an apparent reluctance among parents to accept TVE as the first preference for their children. TVE seems to be, for many, a reluctant second choice after academic courses, particularly as TVE subjects are not considered to be prerequisites for entrance to higher education nor as a good preparation for it. Many parents now seem to share the aspiration that their children should enter higher education, and this is something which is not restricted to those who are relatively affluent and well educated.

3. The secondary school curriculum is structured and organised in a way which seems to prepare students only for higher education and, as a consequence of this, the majority

of secondary school students leave school having followed largely academic courses. Thus they have few vocational skills to enter the world of work and a limited opportunity to gain access to higher education. According to Education statistics (1990/91) and Sudan Weekly (1993) in 1989/90, only 7.8% of all secondary school leavers had the opportunity to attend higher education. Of 173 300 students who sat examinations at the end of secondary schooling, only 13 600 were able to enrol in higher education. The number increased slightly in 1990/1991 and 1991/1992. In 1992/93, this had increased to 11% of secondary school leavers with this opportunity.

4. The cost of providing TVE programmes is high. It is claimed that this is because of the expensive requirements for equipment, materials, curriculum development, teacher training, personnel and management requirements. Additionally, there is the higher cost of the small class sizes required for pedagogical effectiveness in this area. This is problem compounded by the different economical circumstances found in the Sudan.

5. Insufficient information is available for students about TVE courses. It is claimed that this is because of the absence of career counselling and guidance in secondary schools across the Sudan. As a result students do not have adequate information on which to build their educational and career choices.

The following are the main purposes of this study through which the above issues will be addressed.

1.2. Purposes of the research

The broad purposes of this study are to:

1. Examine the views of secondary school students and teachers towards TVE.

2. Ascertain whether there is a relationship between family background characteristics and students' view of TVE.

3. Examine the factors which may influence the introduction of TVE courses in secondary schools.

4. Find out the problems which may face the introduction of TVE courses into secondary school curriculum and how these problems might be addressed.

5. Discuss ways in which the secondary school curriculum might be improved in terms of structure and organisation in order to equip students with skills required for higher education and/or the labour market.

6. Make recommendations concerning:

- The encouragement of private and public sector contributions to the financing of TVE.
- Parents' encouragement of their children's enrolment in TVE courses.
- The improvement of students' views of TVE.

1.3. Significance of the study

The 1991 educational reform in the Sudan which adopted the policy of implementing a comprehensive secondary school system in which TVE would be represented alongside academic and religious education in the same school. This represents an enormous investment in terms of both human and financial

resources. The expected outcome of this reform is to prepare a new generation with the knowledge, skills and attitudes to make important contributions to the economic and social development of Sudanese society. Therefore, there is a legitimate need to discuss and analyse implications of the innovation on secondary and higher education and to determine the extent to which it contributes to the realisation of the objectives of the comprehensive national strategy. Additionally, the rapid rate of social, economic and technological change during the last decades may have made TVE inadequate to enhance the economic development of the Sudan.

1.4. Research questions

This study was designed to answer the following questions:

1. What are the views of secondary school students, secondary school teachers and higher education staff members towards TVE, and is there a significant relationship between students' views of TVE and their:

1.1. gender?
1.2. family's socio-economic status?
1.3. vocational aspirations
1.4. type of curriculum?
1.5. age?

2. What is the influence of parents in student's choice of their secondary school courses?

3. How parents encourage their children to follow TVE courses?

4. What are opportunity to attend higher education?

5. Is there a lack of information about TVE?

6. What are the factors that might influence the introduction of TVE in the Sudanese secondary school curriculum?

7. What are the problems that might inhibit the introduction of TVE into the secondary school curriculum?

8. What changes are necessary to allow more TVE graduates to continue onto education.

9. How should programmes of study be organised in a way that all students will acquire some basic skills which are both useful in the labour market and in higher education?

1.5. Research hypotheses

Based on the above, question one was framed in the form of a number of null hypotheses. The remaining questions are considered as part of the discussion of the research.

1. Respondents as a whole had negative views of TVE.

1.1. There is not a significant relationship between secondary school students' views of TVE, and their gender.

1.2. There is not a significant relationship between secondary school students' views of TVE, and their families' socio-economic status.

1.3. There is not a significant relationship between secondary school students views of TVE, and their vocational aspirations.

1.4. There is not a significant relationship between secondary school students' views of TVE, and the type of curriculum they follow.

1.5. There is not a significant relationship between secondary school students' views of TVE, and their age.

1.6. Assumptions

This study is based on the following assumptions:

1. The sample of secondary schools selected for this study was representative of the population within the schools selected.

2. The responses of the participants were honest representations of their views.

3. The instruments designed for this study were appropriate for measuring students' views of TVE.

CHAPTER TWO
GEOGRAPHICAL, HISTORICAL AND ECONOMICAL BACKGROUND AND EDUCATIONAL DEVELOPMENT IN THE SUDAN

2.1. Geographical and historical background

The Sudan is the largest country in Africa with an area of 2 500 000 square kilometres. It lies between latitudes 22 and 4 north and between longitudes 22 and 38 west. It has a common boarder with 8 countries and a coastline of 644 kilometres at the Red Sea in the east. Traditionally it has been divided into three zones. The Northern zone, which is an extension of the Sahara, the Central zone which is the richest agricultural land in the country, and the Southern zone with a high rainfall.

The river Nile crosses the country from the south to the north and comprises the White Nile, which originates in Uganda, the Blue Nile which originates in Ethiopia, and the Atbara river, together with other smaller branches. The White Nile and the Blue Nile meet together at Khartoum the capital. The area between them represents the most agricultural productive area in the country, where the Gazira Project (the most ambitious agricultural project to date) has been established (see the map in p.10).

Different censuses show that the Sudanese population has grown from 10.3 millions in 1955/56, through 16.8 millions in 1972/73 to 25 millions in 1993 with an average annual rate of growth of 3% during the last 35 years (The National Committee for the Celebration of Sudan's 37th Independence 1993). The people in the Sudan represent an ethnic cross-section of all African peoples. They may be divided into Arabs, Hamites, Negroid African or mixes of the above groups. The vast majority of the population in Northern Sudan has been formed by the integration of the native people (Negroid African, Nobian, and Biga tribe) with the Arabs who arrived from the north through Egypt, and from the east across the Red Sea.

The Sudanese people, traditionally, are known as either Northerners or Southerners, or as Arabs and Africans. Of course, these divisions are not wholly adequate descriptions because none of these groups is homogeneous. Islam is the religion of almost the whole population in the Northern Sudan and Arabic is its main language in addition to several local languages. Islam and Arabic language have, generally, contributed in the unification of the people in the north. In contrast, in the south, the people are divided into different groups according to their tribes, religions, and local languages.

Historically, the word Sudan means 'the land of black people'. It was also known as Ethiopia. Before the spread of Islam there were Alwa and Elmgara Christian States in the northern part of the country. In 1821 Mohammed Ali Basha the Egyptian Ruler occupied the country looking for gold and

strong men to work in his army. Between 1885 and 1899, was the Mahadist period, in which Sharia (the Islamic laws) was applied to rule the country. 1n 1899 the country was occupied by the Anglo-Egyptian forces which ruled the country until its independence in 1956.

2.2. Economy:

The Sudan has a huge economic potential which, if carefully planned, could make it one of the most successful countries in the region. The economy of the Sudan is predominantly agricultural. The structure of economic activity, however, makes it seen as though there were two economies. The first, in which most of the population is engaged, is the cultivation of food crops by traditional methods with little production for the market. The second, is the production of crops and other goods to produce foreign exchange earners such as cotton, oil seeds, vegetable oils, camel and cattle, gum Arabic, hides and skins, and in the years of good harvest, also sorghum and recently sugar. The country was self-sufficient in the main food-crop (sorghum) until the early 1980s when draught resulted in a sharp decrease in its production.

2.2.1. The industrial production:

Industrial production comprises:

1 Cement
2 Sugar
3 Soap
4 Vegetable oil
5 Flour
6 Cigarettes

7 Textiles

Most of these products are for the local market; but, for example, part of the sugar crop began to be exported in 1990.

2.2.2. Problems of the economy:

There are many problems which have resulted in poor economic development since the country's independence in 1956. The main problems are:

1. Continuous changes in the political systems of the country: Since 1956 eight essential changes have taken place in the governmental system ranging between parliamentary, military and transitional governments. The longest continuous period for any one political system to prevail was the military system from May 1969 to April 1985.

2. A rebellion started just before the independence of the country in 1956, in the southern provinces of Bahr el Gazal, Equator and Upper Nile. Many southern Sudanese became engaged in guerrilla-type military activities against the national government especially after the Anya-Nya movement was formed in 1963 with its main objective of seeking independence from the North.

As the result many lives were lost, thousands of southern people fled to neighbouring countries and almost all economic activity ceased. This situation continued until March 1972 when the Addis Ababa peace conference resulted in a peace agreement between the government and the Anya-Nya. This agreement resulted in a peace over all the southern part of

the country until 1983 when the government approved the policy of dividing the country, including the southern part, into regions. Because of this, another guerrilla rebellion (SPLA) Sudanese People Liberation Army began against the government.

The war has resulted in a loss of thousands of lives and the migration of millions of southerners, this time, to the northern part of the country, particularly to the capital. It is estimated that about two million people are sharing inadequate facilities and services, and damaging the environment through living in places which are not suitable for human habitation. In addition, the high cost of the war, drawing upon the limited available foreign currency, has affected the economic development of the country. It has also affected the production of oil from Elmujlad in the Kordufan Region near to the southern part of the country, because the company working there refuses to continue operating for security reasons.

3. There are a large number of foreign refugees in the country, mainly from Eritria and Ethiopia in the east, and from Chad and the Central African Republic in the west. People have fled from those countries as the result of the fighting between their ruling governments and opposition forces. The condition has been changed after those ruling governments have been overthrown. A considerable number of the refugees returned back to their original countries.

4.There are two main reasons for the immigration of people from rural to urban areas:

a. Large economic and developmental gaps between the rural and urban areas. Because most governmental agencies and services are found in the urban areas, this has resulted, over the years, in a huge migration of people from the country to urban areas. The majority of such immigrations are to the capital Khartoum. To close this gap between urban and rural areas the country was divided into six regions in 1980, each with its own government an assembly. Subsequently it was divided into 9 states in 1991 (Alengaz Al-Watani Newspaper 7. 02. 1991).

b. The drought in some parts of the country in 1984 forced thousands of people to immigrate to the larger cities. This exodus was from the western part of the country, especially Northern Kordofan and Northern Darfour which were greatly affected by the drought and subsequent desertification. The Refugees now living in camps around the capital without any work. They depend on the government and charities for their welfare. This has an understandably bad effect on the economic development of the country.

5.Until the mid 1970s there were only 4 757 kilometres of single track railway, 3 500 kilometres of river services and about 18 000 kilometres of roads. The most essential means of transportation was the railway. Their use and importance has since decreased with the building of the highway between

Port-Sudan and Khartoum which crosses the agricultural and industrial production areas in the East and central regions.

In addition, a highway between Khartoum, Sinar, Singa, Eldamazin and Elrosairis has been built. Another route from Khartoum to Kosti, in the south has been constructed and a pipe line has been built to pump petroleum from the Port-Sudan refinery to Khartoum from where it can be distributed to other parts of the country. The river services have stayed much the same since independence.

2.3. Educational Development in the Sudan

The origin of the Sudanese educational system lies in the seventeenth century when there was a high demand for education to learn the Koran as the result of the spread of Islam. Koranic schools 'Khalwas' were established to offer religious education. A summary of educational development presented here in two phases as shown below:

2.3.1. Educational development before independence:

The first Sudanese educational plan was prepared in 1938. It had the following objectives (Sanyal and Yacoub 1975):

- The improvement and expansion of the lower levels of education.
- The expansion of secondary and higher levels of education.
- gradual expansion and participation by the government in education in the South of the country.
- The establishment of a new two-year elementary school system as an integral part of the educational system, to replace the inefficient Khalwas.
- The establishment of a teacher training centre.

- An increase in the facilities at Bakht el Ruda elementary school to serve as a school for sons of tribal chiefs, in addition to its main purpose of providing teaching practice.

- The expansion in elementary education for girls and the establishment of an intermediate school for girls in Omudurman.
- The development of adult education.
- Admission to secondary schools to be based upon the estimated absorptive capacity of the country.
- The transfer of Gordon College to a new site where full secondary education with no vocational training would be followed.
- The consolidation and reorganisation of education in the South under Missionary control with limited government participation.
- An improvement of the Missionary teaching personnel through increased subsidies or grants.

The second National Educational plan (1946-1956), called the Brown Plan, recommended structural changes including Continued expansion of elementary education with lesser emphasis on higher education. However, this was not implemented. Instead, two separate educational plans for the north and the south were approved. The objectives of the plan for the South were the:

- Unification of the educational system with that of the North.
- Extension of government control over the education system.
- Improvement of the quality of teachers.
- Preparation of suitable Arabic materials for schools.

To meet these objectives:

- 26 elementary schools were planned.
- The Bakht el Ruda institute for education should begin to train elementary school teachers for the South.

- A publication Bureau was established in Juba.
- A Ministry of Education was established in 1948 and elementary school teacher training institutes were established in Deling, Shandi and Maridi.
- In 1948, an intermediate school teacher training institute was attached to Bakht el Ruda.

2.3.2. Educational development after independence:

The educational system in the Sudan, as shown by Khartoum Polytechnic Council (1969), had, until 1969, a 4-4-4 organisation (4 years for the primary, intermediate, and secondary schools) which was changed in 1970 to a 6-3-3 for primary, intermediate, and secondary schools respectively. The whole Sudanese educational system can be viewed as having 4 main levels as shown in figure 2.1.

Pre-primary schools:

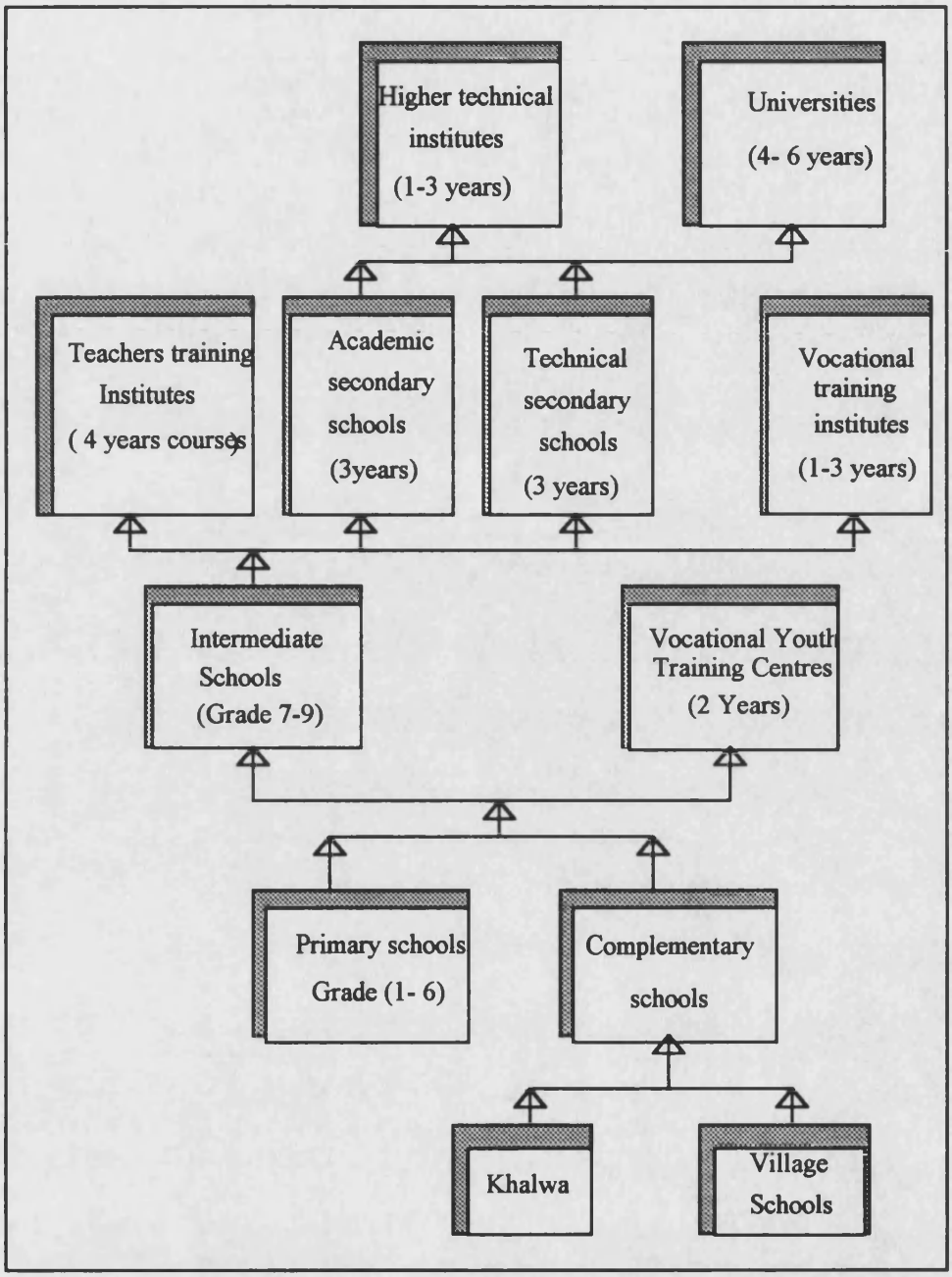
There are a few kindergartens in towns and some pre-primary level Khalwas for children aged 5-7 years. In some parts of the country still there are Koranic schools (Khalwa) which play an important role in the education of children, especially in rural areas. In the southern part of the country there are village schools which provide education. Leavers from Khalwa and village schools may join primary schools at grade 5 to complete their primary education.

Primary schools:

Students enter the primary school at age seven. Although it is highly recommended for all children to attend the primary school at the age of seven, it is not compulsory. In 1977, it was believed that 50% of the boys and 30% of the girls aged

7/8 years were attending primary schools. The six year plan (1977-1983) had stated as one of its objectives that 87% of males and 62% of females of the primary school age should be enrolled by the end of the plan and 100% by 1990. This objective has not been achieved because of the economic problems mentioned earlier (see section 2.2.2 pages 12-15). The aim of the primary school is to enable students to read and write, and to have simple arithmetical skills in addition to providing general courses in elementary science, Arabic language, religion, geography, history and civics (see table 2.1). Pupils move from one level to the next after sitting examinations at the end of each level of schooling. They have to compete for available places at each level. Those who fail to obtain a place of a public intermediate school may repeat a year and try again, may attend a private intermediate school, or leave schooling completely. Generally, the academic year for schools extends from July to March with small variations from one region to another. All schools work between 7 am and 2 pm for 6-days a week with Friday as a holiday.

Figure 2.1 *Educational system before 1991*



Source: *Cameron and Hurst (1983)*

Table 2.1 *Primary schools curriculum*

Subjects	7/8 Year	8/9 Year	9/10 Year	10/11 Year	11/12 Year	12/13 Year
Mathematics	*	*	*	*	*	*
Arabic	*	*	*	*	*	*
Religion	*	*	*	*	*	*
History	*	*	*	*	*	*
Science	-	*	*	*	*	*
Geography	-	-	*	*	*	*

Intermediate schools:

Pupils join this level after a competition for the available places according to their results in the primary certificate. The course is three years long at the end of which pupils sit for the intermediate examinations (see table 2.2). In 1991 this level was combined with the primary school to form an 8 year primary school level.

Table 2.2 *Intermediate schools curriculum*

Subjects	13/14 years	14/15 years	15/16 years
Mathematics	*	*	*
Arabic	*	*	*
Religion	*	*	*
History	*	*	*
Science	*	*	*
Geography	*	*	*
English	*	*	*

Secondary schools:

Similarly, entrance to secondary schools is also by competition, this time based on the result of their scores in the final examinations after intermediate schooling. Students with the higher scores attend academic schools to study

common subjects in the first year; they are then divided into science and arts lines. Other students go to the vocational and technical schools to study general as well as practical subjects for three years (see table 2.3). Since 1991 all streams have been in the same school to form a comprehensive secondary school.

It is believed that TVE is not popular with students and their parents the main reason is because it prevents students from going on to universities, because the academic qualifications required to attend higher education can not be obtained via technical and vocational stream (see chapter 3 for more details).

Table 2.3 *Secondary schools curriculum*

	Academic			TVE		
Subjects	**16/17 years**	**17/18 years**	**18/19 years**	**16/17 years**	**17/18 years**	**18/19 years**
Mathematics	*	*	*	*	*	*
Arabic	*	*	*	*	*	*
Religion	*	*	*	*	*	*
History	*	*	*	*	*	*
Science	*	*	*	*	*	*
Geography	*	*	*	*	*	*
English	*	*	*	*	*	*
TVE subjects	-	-	-	*	*	*

Higher education:

Until 1989 there were 5 universities and a number of higher technical institutions. Most of them were in the capital Khartoum. Now there is at least one university in each region. At the age of 19, students attend universities for a

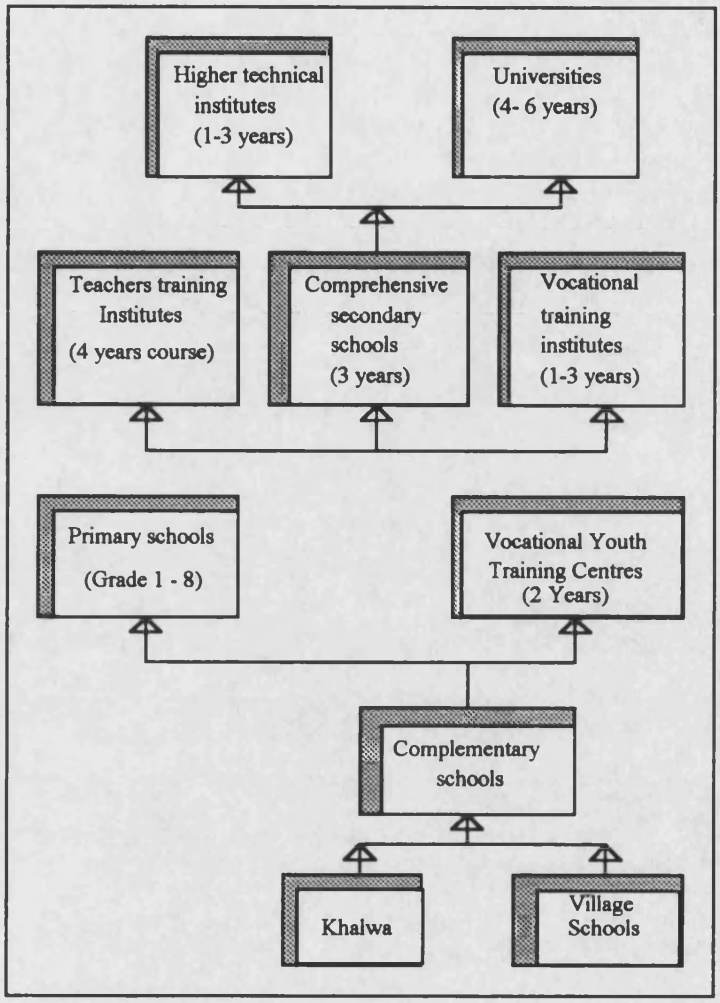
duration of 4-6 years or diploma courses for three years (see table 2.4). Up to 1980, the educational administration was centralised in the Ministry of Education and Guidance. Khair (1991) mentioned that with the implementation of the policy of dividing the country into regions, the educational administration itself became decentralised. All the administration concerning primary and intermediate education, including the appointment of teachers and preparation and administration of transition examinations, are now the responsibilities of each region.

Table 2.4 *Higher education*

19/20	13	Higher	Diploma courses (3 years)
20/21	14	education	Diploma courses (3 years)
21/22	15	institutions	Diploma courses (3 years)
22/23	16		(4,5 or 6 years university courses)
23/24	17		(4,5 or 6 years university courses)
25/26	18		(4,5 or 6 years university courses)

In 1991, as a result of a comprehensive national planning, an educational reform took place. Primary and intermediate schools were combined together to form a foundation level of 8 years. At the secondary school level, all educational streams will be in the same school for 3 years as shown in figure 2.2. (Al-Magrabi 1992).

Figure 2.2 *Educational system from 1991*



Enrolment:

As shown in table 2.5 and 2.6 school enrolment has increased sharply since independence. In 1956 the number of students enrolled for primary, intermediate and secondary schools was 103 577, 5 963 and 1 965 respectively. In 1981 the corresponding figures were 1 464 229, 278 767 and 115 692. Today, (1991) the figures are 2 105 174, 430 515 and 270 899 respectively.

Table 2.5 *Increase in enrolment in primary and intermediate education years 1956-1991*

Year	Primary		Intermediate	
	Male	Female	Male	Female
1956	76996	26581	4675	1288
1959	200165	65306	31351	3005
1962	262611	113571	40699	10800
1965	274980	149697	54479	16734
1968	388549	184047	90636	31066
1971	530869	301058	84278	33070
1974	651191	406148	133269	52896
1977	828364	504343	157544	82516
1980	873054	591173	172537	106230
1983	597280	440707	165268	120081
1986	1081295	749282	211638	165960
1989	1234064	871110	242190	188325
1991	1234064	871110	242190	188325

Source: *Educational Planning and Strategy Department, Ministry of Education 1990/1991*

Table 2.6 *Increase in enrolment in secondary education (years 1956-1991)*

Year	Academic			TVE		
	Male	Female	Total	Male	Female	Total
1956	3220	0190	3410	0069		
1959	4947	0413	5360	0322		
1962	6034	0831	6865	0370		
1965	10543	2464	13007	1245		
1968	13803	3582	17385	1272		
1971	19444	4427	23871	2789		
1974	23528	7691	31219	4604		
1977	33087	10856	43943	7397		
1980	52636	28774	81410	10302		
1983	57545	34780	92325	21408		
1986	94224	71602	165826	17470	5787	23257
1989	137816	107841	245657	15443	6917	22360
1991	141880	106016	247896	16430	6573	23003

Source: *Educational Planning and Strategy Department, Ministry of Education 1990/1991.*

Figure 2.3 *Increase in enrolment in primary schools (1956-1991)*

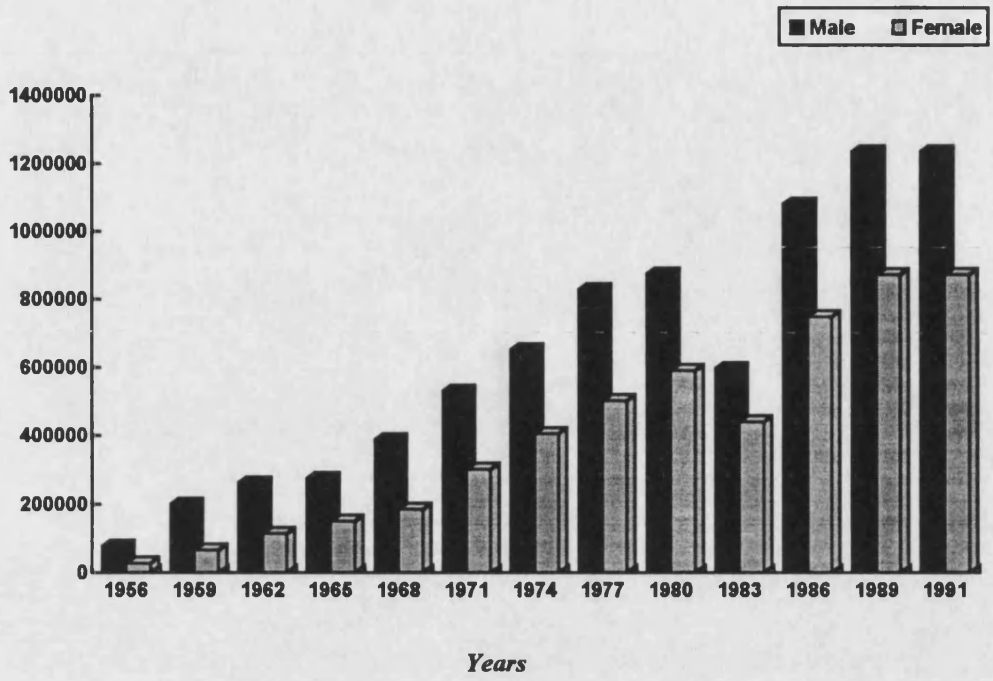


Figure 2.4 *Increase in enrolment in the intermediate schools (1956-1991)*

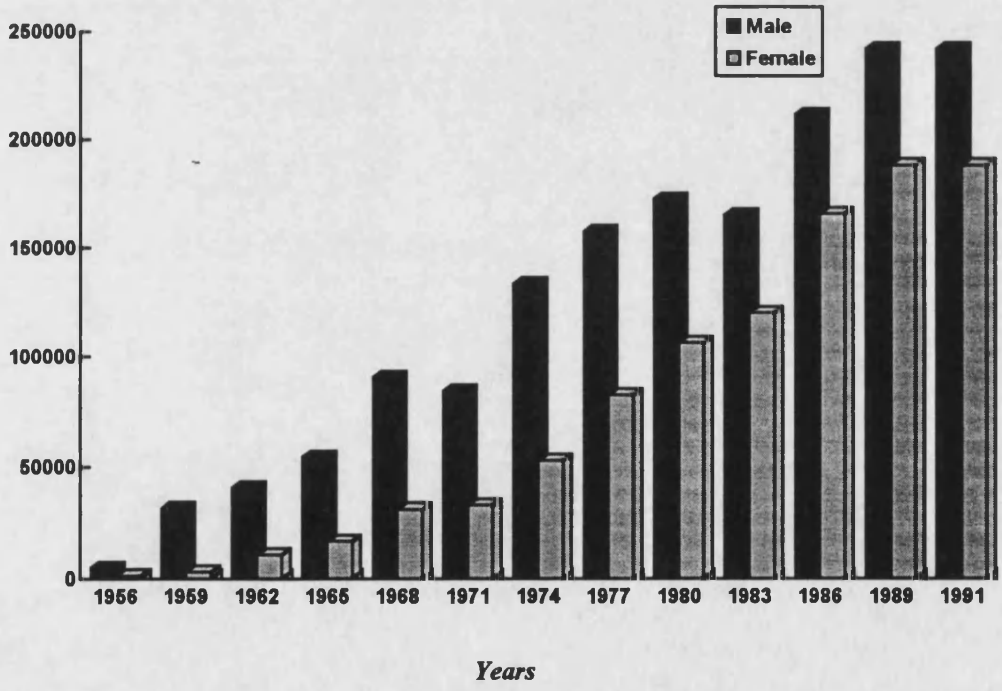


Figure 2.5 *Increase in enrolment in secondary schools (1956-1991)*

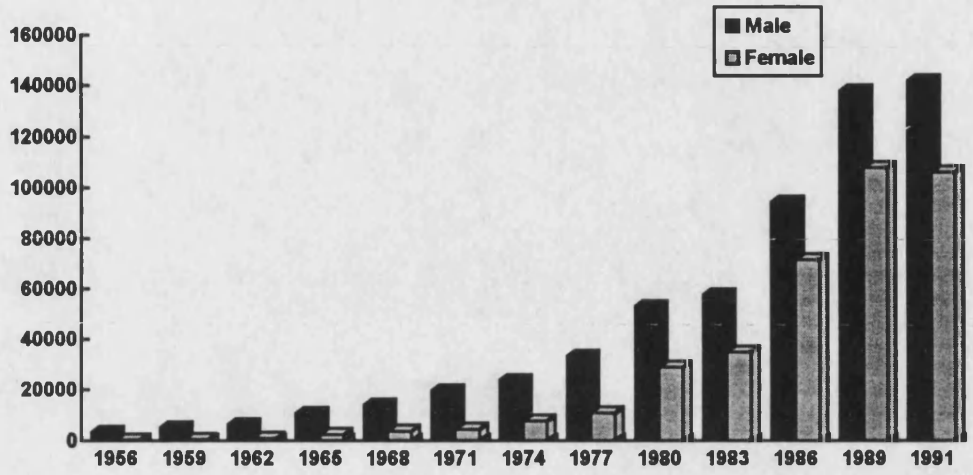
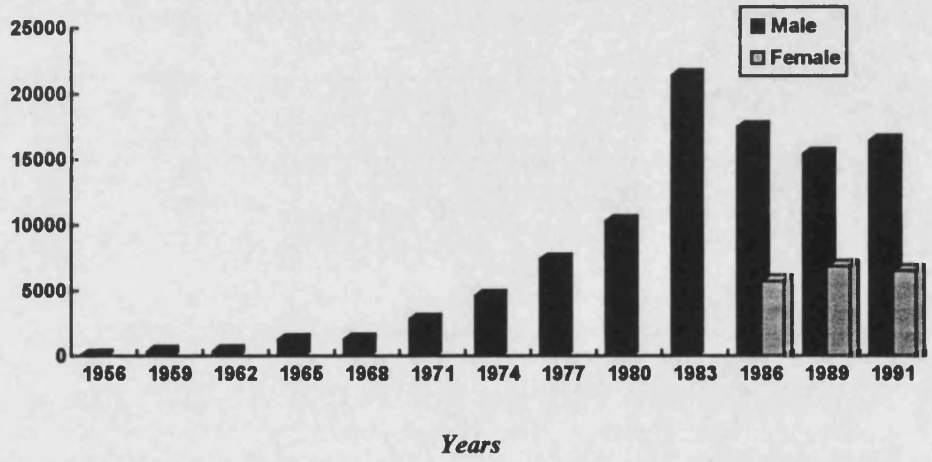


Figure 2.6 *Increase in enrolment in academic and TVE secondary schools (1956-1991)*



2.4. Problems of education:

Husen and Postlethwaite (1985) argue that the Sudanese educational system is faced with several problems which may continue for many years. The first problem is that its aim to have a universal primary education by 1990 has not been achieved because of the economic condition of the country. The second problem is the shortage of well-trained teachers. The rapid expansion in the number of schools has not been followed with the necessary expansion in teacher training

institutions. At the same time, a large number of trained teachers left the profession or emigrated to the Gulf States because of the low salaries and the working conditions of teachers in the country.

A third problem is the high rate of drop-outs because the educational planners were thinking only about the quantitative expansion in their attempts to achieve universal education. This objective was at the expense of the quality of education, where class size and student/ teacher ratio were highly affected. As a result, primary school students who are not able to continue their education are equipped with no marketable skills. Because of this, it has been necessary to think about new types of education. The fourth problem concerns the curriculum and whether it should be unified or decentralised. This is particularly acute as Sudan is a country with different ethnic groups which may be viewed as distinct cultures. Finally, there is the problem of having most secondary schools provide a form of academic education. In 1981, the proportion of secondary students in vocational and technical schools was only 13%. Now it is 8.5%.

Additionally, at the transfer point from intermediate schools to secondary schools there are many problems:

- Only about 50% of intermediate school leavers have the opportunity to go to secondary schools (table 2.5).

- Less academically able pupils are selected for vocational and technical schools after pupils with higher scores have filled the academic secondary schools. Because of this division pupils following vocational and technical courses

are not able to compete with pupils following academic courses for the limited places in post-secondary institutions.

- The final examination results at the end of intermediate schooling are the only means used to assess pupils suitability for academic or vocational and technical schools.

Opportunity of students to attend higher education:

Since independence and until the 1970s, the opportunities for pupils to go up in the educational ladder from primary school level to intermediate school have sharply decreased, and have gradually decreased, for transfer to secondary schools and then on to post-secondary institutions. In 1973 the proportion of secondary school leavers who were able to attend higher education institutions was 66%. Of 10 400 students who sat for the Sudan Certificate at the end of secondary school level, 6 900 students were able to enrol in one of the post-secondary institutions.

In contrast, in 1989/1990 only 7.8% of all secondary school leavers had the opportunity to attend post-secondary education. Of 173 300 students who sat for examinations at the end of secondary schooling, only 13 600 enrolled in higher education institutions. Thus 92.2% left secondary schools without any opportunity to attend higher education. Only 6% of these were from vocational and technical schools, with some skills to enter the labour market. Thus 86.2% of secondary school students left schools having followed largely academic course, and without having opportunity to

attend higher education institutions, and possessing few skills to join the world of work.

2.5. Technical and vocational education (TVE) development

In the Sudan, TVE started as early as 1870 when two vocational schools were opened to train students for the telegraphic system. At the same time, training courses were established by the river service system. As a result of increasing numbers of governmental employees, with the accompanying need for health care, training courses in medicine and pharmacy were started. They were replaced by the School of medicine and pharmacy in 1879. In the field of agriculture, 300 families started their training in a farm to the south of Elobied in 1881 (Sanyal and Yacoub 1975).

In 1901, an industrial school was opened providing three-year courses mainly in building, carpentry, fitting, pottery and cotton ginning. In the following year, the Railway Department established an industrial school at Kasala to supply the railway by skilled workers. This school was moved to Khartoum in 1909, then to Omdurman in 1925 and lastly to Gibait in 1948.

In 1903, a workshop was added to the Gordon Memorial College in order to teach the normal primary school subjects as well as practical subjects such as carpentry, technical drawing, pottery and elementary mechanical engineering. After two years, two secondary courses were introduced to train assistant engineers and land surveyors for the fields of construction and surveying which were expanding due to the

start of irrigation work. The railway extension resulted in an enrolment of 281 boys in technical education in 1914. However, In 1936, technical training was separated from Gordon Memorial College to be taught in higher schools of engineering, agriculture and veterinary science. The De la War commission of 1937 studied the problem of early specialisation and the short duration of general curriculum in secondary schools. It made the following recommendations (Al-Magrabi 1992):

- Changes in the curriculum and methods of teaching at all educational levels to make education more relevant to working life.
- Change the focus of the Gordon Memorial College from a secondary school to an institution that could award certificates similar to the British qualifications.
- Establish Schools of Science, Art and Commerce. These formed the basis of the present development of Schools of Medicine, Agriculture, Engineering and Veterinary Science of the University of Khartoum.

These recommendations formed the foundation of higher education in the Sudan. The Department of Construction established the School of Mechanical Transport in 1942 to prepare skilled workers for automobile maintenance. After World War I the objectives of the education system were modified in order to focus on the training of the Sudanese people for employment in occupations other than those provided by governmental services (agriculture, commerce and industry) and to prepare them to replace non-Sudanese junior officials, especially the Egyptians. The number of students

in technical schools increased from 255 in 1920 to 387 in 1930.

In 1950 a technical institute was established in Khartoum to offer full-time, part-time and evening technological, commercial and arts courses which formed the basis for Khartoum Polytechnic (Now Sudan University of Science and Technology). After two years, an industrial secondary school (S.T.S) was established within the Khartoum polytechnic. The intake of this school was from the industrial intermediate school leavers. Students were prepared in mechanical, electrical, construction, architectural drawing, fine and applied arts.

By 1964, 25 industrial intermediate schools were established by The Department of Education. The enrolment in these schools increased to 4000 pupils who were trained in carpentry, building, welding, electricity, technical drawing and principles of industrial science. These schools were terminated in 1966 according to the recommendations of the International Commission on technical education and training in the Sudan.

In the past thirty years the major change in TVE was in the duration of TVE courses which fluctuated between 3 and 5 years. Moreover, due to the 1991 educational reform which adopted the comprehensive secondary school system, TVE courses have been offered in the same school with academic and religious courses.

This chapter dealt with the geographical and economical background as well as the development in education in general and TVE in particular. The following chapter deals in details with the provision of TVE within the Sudanese educational system and the related literature in the Sudan and in other developing and developed countries.

CHAPTER THREE
REVIEW OF THE LITERATURE

3.1. Introduction

As the researcher reviewed the literature it became apparent that research conducted about Sudanese TVE is scarce. Related literature in the field of TVE in the Sudan, and from other developing countries and United Nations Educational, Scientific and Cultural Organisation (UNESCO) has been reviewed. The literature from developed countries has also been reviewed in order to gain insights about different approaches to TVE and training.

3.2. Technical and vocational education (TVE)

The United Nations Educational, Scientific and Cultural Organisation (UNESCO) in Paris on 19th of November 1974, in its revised recommendations about TVE defines it as:

> *"a comprehensive term referring to those aspects of the educational process involving, in addition to, general education, the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding, and knowledge relating to occupations in various sectors of economic and social life" (p.4).*

At its twenty-first session in Paris on the 10th of November 1989, the General conference of UNESCO adopted a convention on TVE. Article (1) with slight alteration from their previous definition says that:

> *"Technical and vocational education refers to all forms and levels of the educational process involving, in addition to general knowledge, the study of technologies and related sciences and the acquisition of practical skills, know-how, attitudes and understanding relating to occupations in various sectors of economic and social life" (p.1).*

This definition applies to all forms and levels of TVE in public schools or through co-operation between schools and employers. It is understood to be:

1. An essential part of a general education for all students.

2. A means of preparation for work.

3. An aspect of continuing education.

The vocationalization of secondary education is seen by Lauglo and Lillis (1988) to mean curriculum change in a practical direction. It has been defined by Bacchus (1988) as:

> *"efforts by schools to include in their curriculum those practical subjects which are likely to generate among the students some basic knowledge, skills and dispositions that might prepare them to think of becoming skilled workers or to enter other manual occupations" (p.31).*

Bacchus mentions that the incorporation of practical or industrial arts subjects in the school curriculum as part of a general educational programme is an essential element in such a vocational curriculum. Manpower Service Commission, National Economic Development Council (1984) and Cantor (1989) defines vocational education and training as learning activities which contribute to successful economic performance.

Marklund (1988) defines the term "Vocationalizing of Education" to denote all the measures within school and also measures involving co-operation between schools and the world of work, aimed at preparing the individual for a future occupation and livelihood, whatever the social status of the job concerned.

In the Sudan the term Technical Education is used interchangeably with Industrial Education to mean the preparation of students for the world of work at the secondary school level. This occurs in separate schools, each

of which provides a curriculum specialised in one field of study. This might be: Building and Construction school, Mechanical and Electrical Engineering schools, Commercial and Agriculture schools each of which are under the administration of the Ministry of Education and Guidance and which places equal emphasis on theoretical and practical subjects.

The term Vocational Education is used to mean training education for a specific occupation with little emphasis on theoretical aspects. Such vocational training centres are under the control of the Ministry of Labour. There are also Youth Training Centres under the administration of the Ministry of Youth and Sport.

In higher education, only the term Technical Education is used for these kinds of applied courses. It is not common in the Sudan to use the term Vocational Education at the post-secondary level. Omer (1992) argues that what exists in the Sudanese technical schools cannot by any means be considered as technical education because these schools teach only essential principles in the field of Industry, Agriculture and Commerce without qualifying and training for the world of work in a proper way. From the above definitions we can summarise the main ideas in the following ways:

1. Although there may be other ideas, most of the above definitions show that the main purpose of offering TVE is to prepare an individual for the world of work in

contrast to academic education which prepare an individual for more education.

2. An individual may be prepared to acquire the skills required for the world of work by the school, co-operation between school and enterprises, or apprenticeship on the job.

3. The UNESCO definition seems to be more comprehensive as it includes the concept of life-long education which can encompass a unified system of education instead of a divided system between practical and theoretical aspects. It also allows a flexible transition between different educational levels, educational fields of studies and between education and work.

3.3 . Concepts of general education

Nicholas (1983) mentions a number of styles of epistemology. Each of these styles has its own characteristics and approaches to the nature of society, humanity and knowledge which are considered as an important and critical elements in the analysis of education and its development.

3.3.1. Liberal-Pragmatism:

Pragmatism suggests that learning should be directly related to the interests and concerns of pupils' own future lives as workers and citizens. Education in the United States of America has been highly influenced by Pragmatic ideology and its emphasis on useful learning. (John Dewey's ideas about education) Nicholas (1983). The Pragmatic approach is that preparation for work should be carried out by schools which

should make appropriate use of tools and practical techniques as an essential part of their curriculum, while the practical approach should be emphasised in teaching all subjects (Lauglo and Lillis, 1988).

3.3.2. Marxist-Leninist:

Socialists, also, emphasise practical subjects in the curriculum which is found in what is known as polytechnic education. Lauglo and Lillis (1988) recognise that there is some overlap between Pragmatism and Polytechnic Education in that, both reject the division of subjects into "theory and practice" or as "pure and applied" and the notion that the former is always superior and of higher status. They see the curriculum as an integration of both aspects.

While Pragmatism emphasises the value of experience and activity, Polytechnic Education particularly emphasises the educative value of productive work. It stresses that students should participate in real productive work outside the classroom to learn from workers and farmers and so that the boundaries between educational institutions and productive work and the community should be diminished. The need to break the boundaries between school subjects, education and productive work has been recognised by many countries for pedagogical as well as ideological reasons. Well and appropriately trained teachers are important to this process.

3.3.3. Classical European:

Cantor (1991) stated that the Organisation for Economic Co-operation and Development (OECD) identifies three models or

patterns of provision of vocational education for the 16-19 age group in the developed world:

1. **The Schooling Model:** in which emphasis is on the full-time schooling until age 18. For example that seen in Sweden.

2. **The Dual Model:** Highly developed system of apprenticeship and continuing education in which there is a close co-operation between Education, Business and Industry. West Germany and France best represent this model.

3. **The Mixed or (Scattershot) Model:** Comprises elements of both schooling and dual Models. The United Kingdom is an example of this type.

Green (1991) identifies three systems in European countries found in the institutions responsible for offering vocational education and training for post-16 students.

1. An employer-led, work-based system of training through a well established apprenticeship. West Germany is best example of this system.

2. An Education-led, College-based system in which a general education and vocational training are offered in different institutions. France, Italy and Japan are examples of this system.

3. An Integrated Education and training system. This is the same as the second system except that both education and training are integrated in a single comprehensive institution. Sweden best represents this system.

3.3.4. Populism:

Luglo and Lillis, (1988) considered Populism as a movement that celebrated the culture and good sense of rural ordinary people and their rights. It is known as the movement against a dominant urban elite and is a reaction to industrialism and to urban central development strategies. They considered physical productive work as educational for the development of valued personal qualities, and formal schooling as taking children away from their cultural origin and from the real life situations in which the true desired characters are formed.

Moreover, they believe that secondary schools should be prepared to meet the needs of students who would leave schools and return to their communities. This movement believed that the curriculum should be directly related to work and community life, including practical aspects of different subjects.

3.4. TVE and Training in the Developed World

Vocational education in many developed countries started with the main purpose of preparing for employment through training at post-compulsory level in manual skills for occupations. Gradually, the purpose was expanded to include those countries' economic development to reduce unemployment and to increase productivity. In addition, the purpose has shifted to create a balance of both academic and vocational experiences in a common core curriculum, for example UK and USA. Cantor (1989) summaries the important features of

vocational education and training in the developed countries as follows:

3.4.1. The role of central governments in TVE and training:

In the developed industrial countries there are considerable variations in the role played by central governments in this respect. In Germany, the Federal Government has considerable responsibilities for the provision of vocational education and training. In Japan, the central government has been largely responsible for the nature and content of the public educational system as well as public vocational education and training institutions but these public vocational education and training represent only about 2% of vocational education and training in the country. Most vocational education and training is run by large enterprises. public Vocational education and training institutions are administered by the Ministry of Labour and not by the Ministry of Education.

In the USA it is the responsibility of different states with additional federal funds according to a 5-year plan prepared by each State. However, the role of the central government has sharply decreased in the last decade. In the UK, the administration of vocational education and training is the responsibility of state or local authorities but there has been increasing involvement of central government in recent years (Gleeson, 1990). Greinert (1989) identifies three models for the provision of TVE according to the involvement of government.

1. The Market Model: As stated by Georg (1988), the government has a minor or no role in the vocational education process. Japan is identified as the best sample of this model with the following main characteristics:

a. Students are University-oriented.

b. Technical and vocational education is determined by the needs of individuals and employers.

c. Provision, control and financing are the responsibility of the employers.

d. In-house qualifications are provided by the enterprises which prepare the individual to perform different tasks within the enterprise.

2. The Bureaucratic Model: In which the government has a large degree of responsibility for the planning, organising and administration of TVE. Sweden represents this model with the following main characteristics:

a. High degree of bureaucratisation.
b. Close connection between general education and TVE.
c. Comparability of educational standards and qualifications.
d. A marginal role for employers.

3. The Government-controlled Market Model: In which a legal framework of conditions is set by government for the providers of training. The characteristics of this model are high level of co-operation between public vocational schools and private training enterprises. and the extensive involvement of small and medium enterprises. Germany represent this model.

3.4.2. The contribution of the private sectors:

The private sector role varies from one country to another. For instance, in Japan, the USA and Germany it has an essential role while in UK its role and contribution in the provision of vocational education and training is less than what is found in the former countries. These differences may be attributed to the different political philosophies existing in these countries.

3.4.3. The attitudes of employers towards training:

In Japan, the development of the workforce within larger companies has been given a high priority by employers. The government and employers are placing a greater emphasis on vocational training and retraining of the work force. People's abilities are considered as important resources which should be fully utilised because Japan is lacking in basic raw materials. The majority of training and retraining of employees are provided by companies and corporations in Japan and the USA.

In Germany, the majority of training is provided on-the-job by industry itself. It is a national attitude and tradition that the employers are expected to provide initial training and retraining of their employees. This attitude is justified by the employer's perception of this mechanism as self-serving as they use their control of training to develop good work habits and a highly skilled workforce. It also provides social stability to their employees by giving them status.

In contrast, in the UK the commitment of industry to the provision of training similar to that in the Germany is scarce. The main reason that larger companies are reluctant to invest in training is that they are afraid that the money spent by them in training may be lost as trained skilled workers may move to another company which does not provide similar training. However, the school curriculum and its organisation in Britain, France and Germany are criticised by employers because the preparation for entry to work is inadequate and inappropriate. Noah and Eckstein, (1988) mentioned some of the criticisms raised by industry in some developed countries:

- The low standard of literacy and numeracy in school leavers.
- Schools tends to be overly academic and fail to equip students with basic educational skills.
- The lack of communication skills, and skills in co-operation, which are essential for successful employees.

Owen (1986) stated that industry and business criticise graduates from vocational tracks as not possessing either adequate academic or employability skills.

3.4.4. The role of women in TVE and training:

In most developed countries, the contribution of women to the economy, through their involvement in the workforce, has grown steadily over the past two decades. However, in almost all countries, they are restricted, or restrict themselves to a limited number of occupations such as primary school teaching, secretarial work and nursing (Dale, 1985 and Mckinnon and Alhola-Sidaway, 1994). In Japan women tend to be

employed in lower level employment in industry and business. In the USA, UK and Germany, even though there are a lot of equal opportunities legislation, vocational education and training for women still mostly leads them to occupations which have a lower payment, have less security and fewer opportunities for promotion.

In Minnesota State, in the USA for example, women are dominant in home economics, and in office and health education, while males are dominant in trade and industry, and in technical and agriculture. (Minnesota State Commission on the Economic status of women, 1986). Silverman and Pritchard (1993) found that girls were discouraged from taking more technology education in high school owing to stereotypes about suitable occupations.

3.4.5. TVE teachers and instructors training:

Different practices are found in the development of teachers for vocational subjects. For instance, in Australia it is mandatory for teachers in the Technical and Further Education Colleges to take a professional training courses. In the UK it is not compulsory to follow such a professional courses. Across the USA, from State to State, there are a considerable differences in such requirements.

There is a serious shortage of vocational education teachers in some USA high schools which has resulted in a relaxation of the requirement for teacher training in some states. Although some progress has been made in the provision of

initial teacher training in the UK in colleges and industry, more investment is still needed in staff development.

3.4.6. Education and training and the labour market needs:

The competitive nature of the international market place and the rapid changes in the demands of the market as the result of technological change, has produced the need for flexible educational and training systems which are more responsive to individual circumstances and adaptable to labour market needs.

It is observed that the Japanese and German training systems are more flexible than other industrial countries, although they have different systems of TVE and training. From the characteristics of the Japanese system mentioned earlier, the organisation, the desired standard to be attained, and the control of training is mostly the responsibility of the employers. In addition, the loyalty of employees to their enterprises contributes to the flexibility of the training system in terms of market needs.

3.5. Vocationalization of secondary education

Diversification of secondary education is being considered in both the developed and developing countries. The first question to be addressed needs to be: why is the diversification of secondary education sought? In the international literature, different opinions are put forward.

3.5.1. Employment outcomes:

There is a belief that the vocationalization of secondary education may be one answer to the high rate of unemployment experienced world-wide. For example, during the last decade, there has been increased emphasis by African politicians on the diversification of education in order to introduce work-related practical skills as an integral part of the curriculum of schools below higher education. They also believe that this may offer a partial solution to a range of the social and economic problems facing their countries, particularly the high rate of youth unemployment, and the increasing cost of public education.

In 1976 the conference of African Ministers of Education recommended that education should be provided in their countries in such a way that a close link between school and work should be maintained, and barriers reduced between manual and intellectual work, between theory and practice, and between rural and urban areas. They felt that the curriculum of both compulsory schools and higher education. should include productive practical work as an essential component by offering TVE at all educational levels (Gustafsson, 1988).

Lauglo and Narman (1988) argue that the reason for the present trends is not educational, but political. The depressed labour market for secondary school leavers world wide, and its political implications, is the main reason for the debate on the diversification of the secondary school curriculum towards a practical direction. The main goal is

the provision of skills and the encouragement of attitudes which will be useful in gaining jobs. They added that, in developing countries, emphasis is also given to acquisition of favourable attitudes towards living and working in rural areas and the preparation for self-employment.

In contrast, Al-Aaqib (1974) has argued that in the developing countries, political pressures or the chances of political gains are the main reason which has made the authorities spend the little available resources on the expansion of academic education, whereas the actual need for expansion is in the field of TVE in order to bring about economic and industrial development. Rapid technological change has resulted in a shift in the nature of the job requirements which now require both an academic and vocational components to preparatory programmes.

It is, politically, often more gainful for governments of developing countries to expand academic education and find a place for every pupil. Also, vocationalization of education will not solve unemployment problems without a good economical development strategy.

In Sudan there has not been an adequate survey of unemployment across the whole structure of the labour market. The only available source of data concerning unemployment is the number of individuals who have been registered in different offices scattered in the main cities throughout the country, and this reflects only a small portion of unemployed individuals. It is also believed that, in the early 1970s at

least there was a high rate of unemployment among the academic secondary school leavers (Sanyal and Yacoub, 1975).

In the early 1970s the Sudan government provided a special fund for the employment of graduates who were searching for work. The amount of money made available for this purpose was called the Employment Relief Fund. This fund was made available for several years. Since it ended, the number of unemployed secondary school leavers has been increasing sharply owing in the main part to the wide expansion in education in the mid 70s. This nationally increased the number of people leaving school, but meant that less money was available for helping unemployed youth. Several factors are felt to be responsible for the high rate of unemployment for Sudanese secondary school leavers:

1. The static condition of the country's industry with little expansion owing to the reluctance of foreign as well as local investors to invest because of the political instability in the country is probably the most significant issue.

2. The increasing number of secondary school leavers is a factor too. Tables 3.1 to 3.2 show how the number of students in academic secondary schools sharply increased from 75 482 in 1979/1980 to 247 896 in 1990/1991 while students in technical schools increased from 12 680 to 23 003 in the same period of time. The former increased by 282% compared to 82% for the later.

Table 3.1 *Number of academic secondary schools and students (1979/91)*

Year	Number of schools				Number of students		
	Male	Female	Mix	Total	Male	Female	Total
1979/80	86	45	00	131	54653	20829	75482
1984/85	123	81	12	216	58436	37768	96204
1989/90	133	106	01	240	68753	49734	118487
1990/91	253	221	29	485	141880	106016	274896

Source: *Educational planning and strategy department, Ministry of Education 1979/91.*

Table 3.2 *Number of TVE secondary schools and students (1979/91)*

Year	Number of schools				Number of students		
	Male	Female	Mix	Total	Male	Female	Total
1979/80	35	05	00	40	10359	2321	12680
1984/85	50	08	00	58	14481	2442	16923
1989/90	42	11	00	53	14843	5111	19954
1990/91	49	20	03	72	16430	6573	23003

Source: *Educational planning and strategy department, Ministry of Education 1979/91.*

3. The structure of business, industry and the service sector is also significant. Almost all companies have been State owned since the early 1970s. Since a policy of privatisation several establishments are now privately owned.

4. Secondary school leavers' employability skills also must be considered. Omer (1992) argues that the curriculum of technical schools has concentrated on the essential principles of industry, agriculture and commerce and a range of academic subjects which can not prepare students properly for the world of work. This curriculum is that which existed before independence and into which no modern industrial

technology has been introduced. The curriculum, in other words, has not been designed to meet local community and national needs.

5. The economic condition of the country as the result of the war and drought and other reasons mentioned in (Chapter 1) cannot be ignored. However, there has been very good progress in food production in the last two years. For example, in 1992 the grain produced was 8 million tons while the country's need was only 4 million tons. The number of refugees has sharply decreased because most of them returned to their countries as the result of the political changes in Ethiopia, Eritria and Chad.

Psacharopoulos (1988) presented the studies in Colombia and Tanzania to investigate whether the outcomes of a diversified education are different from purely academic and purely vocational schools.

Colombia and Tanzania were selected for this study because both countries had extensively experimented with the diversification of secondary education during the 1970s. In Colombia the diversified schools are called INEM (Institutos Nacionales de Education Media) and a combination of academic and pre-vocational subject tracks are offered in a six-year programme under the same roof. In the first two years, students study pre-vocational subjects to acquire the knowledge and career options in different trades. In the second two years they follow courses in vocational

orientation e.g. in agriculture, and commerce, as well as taking additional academic studies.

Vocational courses are clearly emphasised and the last two years can be devoted to further specialisation in metal work, construction, electrical mechanics and the likes, or students can concentrate on academic studies. Besides INEM, CASD (Centrros Auxiliares De Servicios Docentes) exists which offers special 'hands-on' training in those vocational skills considered important for students in the formal school setting. These are provided through two to three day release programmes from schools.

In Tanzania, education and economic growth are controlled by the government. Because of this, diversification of education has not been introduced simply in order to supply middle level skills as part of human resource requirements. The main reason for diversification is a commitment to a socialist philosophy which emphasises the ideals of productive work in education. Students are required to be acquainted with practical skills in addition to academic subjects in order to cope with the Tanzanian philosophy of self-reliance and self-sufficiency in its need of skilled human resource.

The study in Colombia identified two sets of outcomes:

1. What is learned in school.
2. What is achieved later in post-school, economic activity.

There were three points of comparison between the socio-educational inputs and outputs in the longitudinal study which was carried out.

- Observable effects while students are in school.
- Observable effects one year after graduation.
- Effect some time after graduation.

Three different instruments were used :

- An individual student questionnaire while in school.
- A school questionnaire for head teachers.
- A graduate follow-up questionnaire.

Concerning the initial destination of graduates, the result indicates that no major differences are found in post-school activities between INEM graduates and other non-INEM graduates. This is shown in table 3.3.

Table 3.3 *1982 Destination by school type and subject (Post-school Activities 1982)*

School type/ subject in 1981	study	work	study /work	other
INEM	37.0	29.0	10.0	24.0
Control	37.0	30.0	11.0	22.0
Overall	37.0	30.0	11.0	22.0

Source: *Psacharopoulos (1988)*

Table 3.4 *Probability of being in full-time work in 1982 by school type and subject*

Subject	INEM		Control	
Academic	29.6	(39.1)	28.7	(28.7)
Vocational	28.1	(39.3)	33.7	(43.9)

Source: *Psacharopoulos (1988)*
Notes: *Figures in parentheses includes those who both work and study*

Table 3.4 shows that those coming from the control vocational schools have more opportunities to be employed one year after graduation than those coming from other schools.

Table 3.5 *Period of unemployment before first job by school type and track (in weeks)*

Subject	School type	
	INEM	Control
Academic	21.2	21.6
Vocational	25.6	26.4

Source: *Psacharopoulos (1988)*

As shown in table 3.5, the result indicates that those who have followed vocational courses in INEM or control schools have experienced a longer period of unemployment.

Table 3.6 *Monthly earning by school type (in Pesos)*

School type	Mean earnings (in Pesos)
INEM	9854
Control	9980
Sample	9887

Source: *Psacharopoulos (1988)*

The result of the study shows that earning differences are slight but that academic school graduates earn more in comparison to the rest (see table 3.6).

In Tanzania, the study by Psacharopoulos of the effect of vocational education in the employment of graduates from secondary schools found that, although it was expected that graduates from agricultural, technical and commerce biased schools would be employed in a shorter period of time after graduation than academic school graduates, the result showed that a year on from graduation the percentages of students who were still looking for work or further training were 13,

16, 16 and 18 for academic, agricultural, commercial and technical students respectively.

A similar study has been carried out by the division of TVE and Training, National Training Board, Ministry of Education in Trinidad and Tobago in 1982/83 in order to measure the labour market performance by diversified secondary school graduates (Chin-Aleong, 1988). These outcomes are identified as:

- Do they find jobs related to their original training?
- How quickly do they find employment?
- Comparisons with other graduates in relation to rate of placement.
- Earnings.
- Job satisfaction.

Table 3.7 *Time taken (in months) to find the first full-time job (by stream)*

Stream	Mean	SD	N
Pre-technician	12.5	9.1	123
Academic	9.6	8.2	71
Specialised crafts	7.9	8.4	208
All cases	9.6	8.8	402

Source: *Chin-Aleong (1988)*

Table 3.8 *Mean job satisfaction by stream*

Stream	Mean	SD	N
Pre-technician	2.37	0.88	119
Academic	2.26	0.75	71
Specialised crafts	2.07	0.85	203
All cases	2.20	0.88	393

Source: *Chin-Aleong (1988)*

Scale: *1= very satisfied; 2= satisfied; 3= dissatisfied; 4= very dissatisfied.*

Table 3.9 *Mean preparedness by stream*

Stream	Mean	SD	N
Pre-technician	2.63	0.89	114
Academic	2.64	0.91	70
Specialised crafts	2.37	0.93	199
All cases	2.50	0.92	383

Source: *Chin-Aleong (1988)*

Scale: *1= very satisfied; 2= satisfied; 3= dissatisfied; 4= very dissatisfied.*

Table 3.10 *Average monthly salaries of graduates by gender and stream (in Trinidad and Tobago Dollars)*

Stream	Gender								
	Male			Female			All cases		
	Mean	SD	N	Mean	SD	N	Mean	SD	N
Pre-technician	687	364	063	547	261	51	624	328	114
Academic	605	299	027	620	371	40	614	341	067
Specialised crafts	644	419	165	577	264	31	634	399	196

Source: *Trinidad and Tobago Ministry of Education (1983)*

The result of the study shown in tables 3.7 to table 3.10 indicates that graduates from Specialised crafts schools:

1. Find their first job in a shorter period of time after graduation than other streams.
2. Are on average more satisfied with their jobs.
3. Are better prepared for work.

However, In all these three measures, other groups are approximately around the mean. The mean earnings are $634, $614 and $624 for specialised crafts, academic and pre-technician graduates respectively but there are sharp variations between men and women.

These results show that there is no significant differences between graduates from these streams in finding their first job, satisfaction with their jobs, preparation for jobs and earnings. Generally the results support the findings from Colombia and Tanzania in that the expected outcomes have not been realised. Of courses many additional factors may be contributing to these results; Including, for example, the overall design of the research and the time for collecting data in the case of Colombia.

In the developed countries, several studies have been carried out to find the effects of TVE on labour market outcomes. Wages, number of job changes, employment rates, job satisfaction, and satisfaction with education preparation for labour experience were all used as indicators of labour market outcomes.

Shanahan (1989) in his study of the effect of vocational education on employment outcomes of the non-college-bound high school graduates of an urban school district in the US Rocky Mountain Region concluded that no significant relationships exist between credit earned in vocational education and hourly wages, number of job changes and job satisfaction.

Graduates employed in occupations related to their vocational training, earned significantly higher than those employed in occupational areas unrelated to their vocational training. Also, a positive relationship was found between credit earned in vocational education, and satisfaction with high school

preparation for employment. The respondents entering employment after graduation from high school considered English, mathematics, vocational education and social studies as useful to their jobs. Stern (1986), found that:

> *"high school vocational training did not give any relative advantage in finding jobs after graduation..... Furthermore, there is no evident way in which reallocating resources may bring about much improvement in labour outcomes for graduates" (p.1).*

Miller (1990) found that vocational graduates of secondary school believe that their high school vocational training was useful in their present job. Carter (1989) in his study of selected school districts in Texas, USA found the following results:

- Vocational education has a significant effect on wages. The wages of vocational education programme completers were significantly higher than their non-vocationally trained graduates.

- Many vocational education programme completers have a significantly lower unemployment rate than the expected national equivalent rate. For example, the unemployment rate for auto mechanics programme completers was 14.4% while the equivalent rate was 16.32%

- The drop-out rate for vocational education is lower than for non-vocational education students.

Min, (1987) in his study in China concluded that secondary TVE school graduates working in jobs closely related to their original training are more productive than general senior high school graduates having the same jobs. He attributed this result to the higher level of satisfaction of TVE school

graduates, and the specific technical skills offered to them which met the skills required in their jobs. Moreover, the former were more satisfied with their jobs than the latter. This is attributed to the better technological and psychological preparation for employment.

Garrity (1989) found that vocational graduates in rural Northwest Pennsylvania earned more than academic graduates. While no significant difference in job satisfaction was found. However, Wilms (1988) argues that "little persuasive evidence exists that high school vocational programmes, compared with other high school programmes, pay off in placement and earnings" (p.88).

The findings from existing research about the labour market outcomes in the developed world are inconsistent. Some show higher earnings and productivity of vocational school graduates while others show either no differences or negative results in comparison with academic general education graduates. The same findings exist in the Developing Countries but most of the results tend to be negative. This may be attributed to the low economic and industrial development which resulted in few opportunities for employment.

3.5.2. The Supply of skilled people for the labour market:

Another reason mentioned for the diversification of secondary education is the supply of skilled people for the national development needs. Chrosciel, (1989) argues that:

"A continuous but regulated supply of different types and levels of well-trained and skilled human resources is one of the essential prerequisites to economic and industrial development. It has long been recognised by industry, crafts and commerce that vocational training is in itself an investment, as the quality and standard of goods produced and of services rendered depend to a large extent on the level and degree of skills that the staff involved possess" (p.41).

Powell (1988) argues that when education and training properly administered, they can play an important role in facilitating adaptation to structural changes in economy and in helping to equalise employment opportunities.

Unfortunately, the technical and vocational programmes, and training at the secondary school level in the Sudan, as well as many other developing countries, are unable to prepare a qualified, skilled workforce for national development. The shortage of skilled and semi-skilled people in the workforce has been reflected in different studies. For example, Sanyal and Yacoub (1975), a Technical Education Committee established by the Ministry of Education in 1979 to study why Technical Education had failed to achieve its expected objectives of preparing well trained workforce for the national development needs.

The shortage of a qualified workforce was the main reason that these national development plans did not achieve their anticipated outcomes. The report presented by the representative of the Sudan in the 1983 International Symposium convened by UNESCO about the transition of technical and vocational school graduates to work, concluded that the following problem existed in the Sudanese vocational and technical education and training which may be

contributing in the shortage of skilled and semi-skilled people in the labour market.

1. No technical or vocational exploration, preparation or training is offered below secondary school level.

2. Vocational workshops are poorly equipped. Al-Amin (1986) mentioned that there was a shortage of equipment and other school facilities. Abu shanab (1992) attributed the failure of secondary schools to achieve objectives to the poor school environment. Schools lack proper libraries, laboratories, workshops and the like.

3. There are shortages of qualified vocational and technical teachers. Hashim (1992) argues that there is an acute shortage in qualified trained technical teachers to the extent that some technical secondary school graduates were employed as teachers.

4. The Irrelevancy of skills taught in vocational and technical schools to the labour market needs. The curriculum has not been revised and updated to cope with technological development, but is still teaching the same topics as in the pre-independence era. Academic subjects occupied most of the timetable. There is not any link between school and industry in particular, and with the community in general.

5. The responsibility for the planning and administration of technical schools and vocational training centres is scattered among different agencies.

6. There is a lack of interest in this kind of education among students and their parents because of their belief in academic education as the means to high-status occupations.

Al-Aaqib (1974), Al-Amin (1986) and Abu Shanab (1992) identified the same problem. Similar problems were identified by Falunawa and Aiscku (1982) in African countries and by Shehab (1987) in Bahrain and other developing countries.

All these problems are contributing to the system's ineffectiveness in producing qualified skilled people. We can add to this the lack of human resource forecasting which has resulted in an imbalance of graduates from different fields of study.

3.5.3. Social outcomes:

It is believed that the existing academically-oriented educational system is providing inequality between the small elite groups who have been successfully educated and those who failed to complete their studies for different reasons. In the Sudan where only a small portion of secondary school leavers have the opportunity to attend higher education, the problem of inequality is obvious. Although the intake for higher education. sharply increased during the last two years from 6 500 students in 1980s to 13 000 in 1989/1990, to 20 000 in 1991/1992, to 27 000 in 1992/1993, and to 30 000 in 1993/1994.

The vast majority still will reach the end of their education. The question addressed is whether the diversification of secondary education will enhance equality

of opportunity. Also, it is expected, for traditional and religious reasons, that female students will be concentrated in specific fields of study and that fewer of them will follow technical and vocational streams. Table 3.2 shows that there are only 20 technical schools for girls, in which almost all are following commercial studies compared to 221 girls academic schools. Only 6 573 female students are enrolled in these 20 schools compared to 106 016 following academic studies.

3.5.4. Educational outcomes:

There is still a belief that TVE is only a suitable type of education for low academic ability students, so that less academically able students should be channelled into vocational and technical tracks while students with high ability should be selected for academic tracks. A similar view was mentioned by King (1993). This may be the reason which explains the practice of allocating students to different tracks in Sudanese secondary schools. This may have been valid when students needed to be prepared for specific and simple jobs which was the nature of many jobs in the past, but is not the case now. Rapid technological change has created a need for occupations which can not be performed without having the combination of both academic and vocational education.

However, the General Education Committee (1991) in the comprehensive national strategy for education (1991-2002) adopted the policy of having all streams in the same school (multi-stream school). But the questions which have not been

answered by the strategy are: how students will be selected for different streams? How can we change the negative perceptions of students and parents towards technical and vocational education? How can the curriculum be designed so that the theoretical and practical aspects be incorporated to each other? Of course, this practice has also contributed in the poor performance of technical and vocational school students in the labour market and in their scores in the final examinations for entry to higher education.

3.5.5. Attitudes change towards manual work:

The study of the effect of technical education on the aspirations and expectations of secondary school students in Kenya by Lauglo and Norman (1989) concluded that it has had an effect in making students interested in technical or practical work as a future career. Again one of the objectives of the comprehensive national strategy as stated by Abu Shanab (1992) is to change students attitudes towards manual work.

3.6. Governments reluctance to vocationalise education

This may be attributed to some or all of the following reasons:

3.6.1 As stated by Muserva (1989), and Dunham (1989) there is a high cost of introducing practical subjects into schools especially when they are to be introduced quickly, and on a large scale. This is because of the expensive requirements for equipment, materials, curriculum development, teacher training, personnel and management requirements and

maintenance. Also, there is the high cost of the small class sizes required for pedagogical reasons.

Al-Aaqib (1974) attributed the unsuccessfulness of TVE in the developing nations to its high cost compared to academic education. For example in 1974, the cost per student following technical and academic education was 255 and 134 Sudanese pounds respectively. Alaqib argues that only the cost was considered in this comparison without giving any attention to the return. A similar view was expressed by Navaratnam and Hillison (1987) as they state that "the traditional method of evaluating secondary vocational education, by simply establishing relationship between dollars and inputs, is an inadequate and incomplete measure of economic benefit of vocational programmes" (p.49).

Al-Aaqib concluded that the political pressure and the political gains were the main reasons that the governments in the developing countries spend the little available resources in the expansion in academic education. This, also, may be the reason for the expansion in quantity without giving attention to the quality. Many studies were carried out to compare the cost of practical subjects with academic ones. Hinchliffe (1983) carried out a study of the costing of four groups of secondary schools in Tanzania and six in Colombia.

In Tanzania, the total annual unit recurrent costs are found to be 13, 19 and 9 percent higher for agriculture, technical and commerce respectively, compared with academic schools. The total unit social cost differences are 2, 3 and 4 percent

higher for commerce, technical and agriculture biased schools respectively, compared with academic biased schools.

In the case of Colombia, the differences in unit costs between different tracks within World Bank-funded project schools, with a combined academic and pre-vocational curricula, are very small. Hinchliffe (1983) attributed, however, this result to defects in the design of the research used for this study.

Generally, this small variation between the costs of agriculture, technical and commerce biased schools compared with academic biased schools are not supported by the result of similar studies in the developed world where the variations of costs are very high. Table 3.11 summarises the studies conducted by different authors in both developed and developing worlds: These differences may be attributed to the variations in the student/teacher ratio where, in the developing world, the number of students in a class is greater than in the developed world. Also, the equipment used in the developed world tends to be more sophisticated and expensive. Several methods have been used in different countries to reduce the cost of provision of TVE. The following are some of them:

The development of inter-school vocational centres to provide technical/vocational training for a number of secondary technical/vocational schools instead of providing such centres for every school. Ascher (1987) mentioned shared-time country vocational schools which provide vocational

preparation for students from different academic schools in the same district.

Table 3.11 *comparison of costs of vocational and academic subjects*

Author	year	country	cost approach	findings
Cage	1963	USA	Whole programme costed in individual college	Wide variations of unit program cost across colleges
Taussing	1968	USA	Costing of institutions (high school) with vocational bias	Unit teaching costs 66 percent greater. Unit recurrent costs 43 percent greater in vocational high school than in academic high schools
Huret al	1971	USA	Costing of high schools with vocational bias	Unit recurrent cost 44 percent greater in vocational high schools than in academic high schools
Warren te.al	1976	USA	Comparison of costs of occupational courses with a liberal courses arts base courses	Technical and trade and industry curricula cost 50 percent more than the basic baccalaureate courses
Meath	1974	USA	Costing of vocational subjects in two-year college.	Mean cost per student-hour 29 percent higher in vocational subjects than in humanities
Hinchiffe	1983	Tanzania	Costing of vocational subjects in two-year college	Unit recurrent costs 19 percent in agriculture-biases schools, 13 percent in technical-biased schools, 9 percent in commerce-biased schools
Cumming te.al	1985	Kenya	Costing of individual education subjects	Staff costs of IE subjects twice those of classroom subjects. Capital costs five times as expensive as classroom subjects
Tibi	1986	Thailand	Recurrent costs of three kinds of colleges compared.	Unit costs in agricultural colleges were 98 percent higher and in technical colleges 54 percent higher than in professional colleges

Source: *Cumming (1988)*

This type of shared-time vocational school or centre can be used in cities where access to them from different academic schools is possible because several such schools are in the same area. This type of school is not practicable in rural areas where, for geographical reasons, schools are scattered and separated by long distances. Mobile centres may be more appropriate for such rural areas provided that paved roads are available.

Mobile training centres may be used to serve several schools (Carter, 1989). Both the shared-time vocational schools and mobile training centres were recommended by UNESCO. It also suggested the following ways to reduce costs:

- Workshops in schools should be designed in such a way that they can be used by all the community, and particularly by the continuing educational programmes.

- Workshops and laboratories in advanced schools or higher education institutions should be staffed and equipped so that, in addition to their main pedagogical purposes, they can supply equipment to be used by general and vocational schools.

- Gray (1993) stated that A close link should be maintained between employers and educational institutions to make full use of cost economies possible. This link should be maintained in organising practical training for secondary school students (Boulogne, Benett and Mckenzie, 1994).

- Fees may be introduced as a means of reducing the cost of provision of TVE and training. Middleton identifies different financial resources used beside the governmental funding of TVE and training. It may not be acceptable to students and parents for tuition fees to be introduced, as they already have negative perceptions about this type of education.

3.6.2 Changing patterns in World Bank investments in vocational education and training provide some evidence to suggest that all types of job-related training have been difficult to establish in low-income countries. Middleton, (1988), in his review of twenty two middle-income countries, has specified Brazil, Jordan and Korea as having developed an effective industrial training system including formal and informal secondary and post-secondary systems. The same idea was shared by Psacharopoulos and Patrinos (1993). These systems are considered productive.

The productivity is reflected in the high rate of placement of graduates, high internal efficiency in comparison with other similar countries, and the degree of employer's satisfaction with graduates. These systems can be considered as examples of successful practice in developing countries. Middleton cites the following common features as contributing to the success of these systems:

1. Long term perspectives with multiple investment:

An effective training was developed in a long period of time with continuous commitment by providing the necessary

investment, and adjustments in the process of development. This process has continued for 15 years in the development of 5 projects in Jordan, 18 years in the development of 5 projects in Korea and 16 years for the development of 3 projects in Brazil.

2. Expanding industrial employment:

Throughout the whole period of the development of these projects development, jobs were available for graduates in Korea and Brazil despite their economies being in recession. In Jordan, the return of skilled labour from abroad affected the labour market and resulted in adjustment of both the training system and employment. The training institutions in these countries developed a strong link with employers which provided a feedback of their needs for the skilled labour force and a high level of participation in the decision making in the area of curriculum development and enrolment. This contributed to the flexibility of the training systems.

3. Small-scale beginning and incremental expansion:

In these countries, the development started with small, simple, formal vocational education institutions and only then the complexity of the development was gradually increased.

4. Responsive planning:

Because of the lack of proper human resource forecasting at the beginning of the project, investment in these three countries had to be justified on the basis of industrial expansion. The strong link between training institutions and

employment was important in providing a base for the forecasting of labour market needs for incremental and localised planning and adjustment. For this reason the location of the training institutions was very important.

5. Early and continuous involvement of employers:

All necessary efforts were made to make strong links between training and employment. The enterprises had important and effective roles in curriculum planning, enrolment decisions and in providing on-the-job and apprenticeship training. Therefore the actual employer's needs were reflected in training plans and curricula.

6. Evaluation of policy and management capacity to match system complexity:

The systems in these countries started with strong management capacity within the Ministries of Education. Afterwards, particularly after the expansion of the system, the national non-formal training agencies were established to be responsible for the management of job training. The formal vocational education was left under the control of the Ministry of Education. At the middle stage of the development, polices were formulated as a result of experiences from previous stages of development. From the early stages, national testing and certification were given attention and this resulted in an effective feedback on the quality of the training provided. The Authority for curriculum decisions was gradually decentralised to the training institutions themselves.

7. More attention to alternative financing resources:

Other financial resources were introduced beside governmental funding. For example, in Korea and Brazil, payroll taxes were used as a major source for financing vocational training. In addition, tuition fees were introduced. In Jordan, user's fees were introduced. These additional resources stabilised the fund available for vocational training.

8. Investment in quality:

The strong link with employment and the early establishment of testing and certification systems played a key role in the improvement of quality and the relevance of teaching and learning. In each country, incentives were introduced to attract good instructors as well as students. For example, incentives for instructors were in the form of scholarships for teacher training, free housing, exemption from military services and salary incentives. Permanent curriculum development units were established and integrated with teacher training programme. Curriculum development was based on occupational analyses.

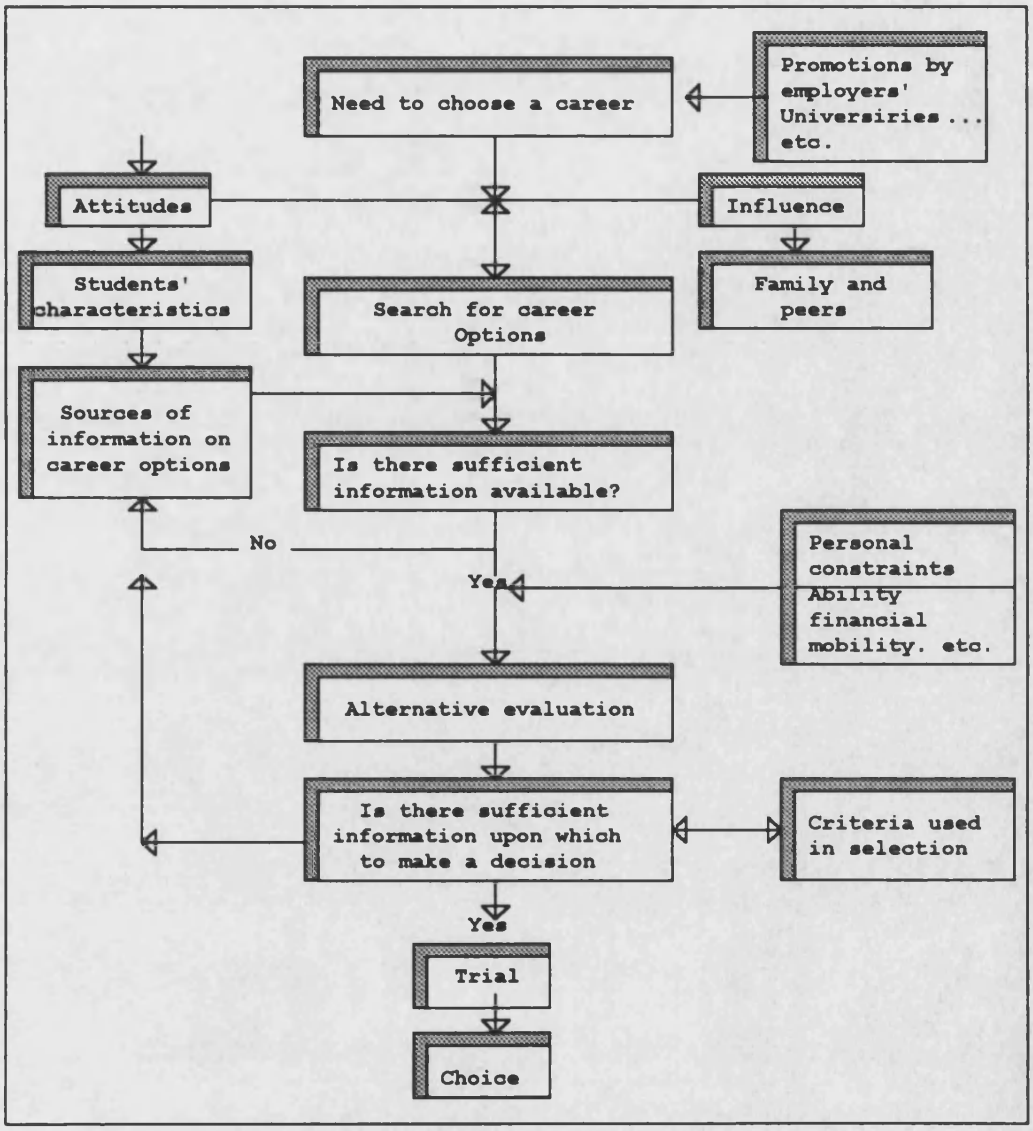
9. Flexibility of curriculum and institutional design:

These characteristics made vocational training institutions more flexible to changing economic conditions. All three systems adjusted to their country's needs for training and major changes to the curriculum were made to cope with different economic circumstances. In Korea, every possible effort was made to adjust training curricula to cope with the changes in the technology of production associated with high rates of enterprise participation. In Jordan, the system was

flexible enough to adjust to the changes in external labour markets and established training centres in companies. In Brazil, curricula used adjusted to local needs by decentralisation of its development to state level.

3.6.3 Perceptions are common within Sudanese society that TVE has a low status. Where students and their parents have this view, students are reluctant to follow this line of education which they perceive will lead them away from higher education and high status occupations. Al-Aaqib (1974) observed that there is a feeling in the Sudan and other developing countries that TVE is a second class type of education with no valuable end-point. Al-Amin (1986) stated that there has been an apparent reluctance among students to enrol in TVE programmes in school. high status was given to academic studies than to TVE which has been considered as a low status education leading to blue-collar jobs. Abu Shanab (1992) specified that the publicly held opinion that society in general and students and teachers in particular have a negative views of TVE. Frost (1992) Summarises the process of career choice and the factors affecting choice. These factors are shown in figure 3.1.

Figure 3.1 *Career choice process*



Source: *Frost (1992): For more clarification some details were added to the model.*

An attitude is an important factor affecting career choice. However, there are other factors which can affect the choice. These factors are:

- Influence of others
- Availability of information
- Promotions by employers and universities

Slamet (1987) carried out a study to investigate the attitudes of senior high school students and their parents towards vocational education in Yogyakarta (Indonesia). Akintode (1988) conducted a study to investigate the attitudes of secondary school students towards TVE in Lagos state (Nigeria). Shuhail (1990) carried out a study to investigate the attitudes held by vocational school administrators, teachers and students in the United Arab Emirates (UAE) towards vocational education programmes. In all these studies students have positive attitudes towards vocational education.

Significance differences were found in the attitudes of male and female students towards TVE in studies carried out by Akintode (1988) in Lagos State (Nigeria), Mcgillicuddy (1989) in New York State (USA) and Rossetti, et al. (1990) in Ohio State (USA).

Rossetti, et al (1990) found that parents and teachers have important roles in students' selection of the type of curriculum they follow. He stated Lam's second category of the classification system of barriers that influence students not to enrol in further education. The second category of this classification system is the immediate external reasons in which influence of others (parents, counsellors, school personnel, friends, neighbours, teachers and other relatives) is one component of this system (Lam, 1982 in: Rossetti, et al., 1990).

Experience from different countries supports the opinion that the perceptions held by students and parents may be changed in favour of TVE whenever there is an opportunity for students in this stream to continue their education. Wilson, (1993) claims that in Indonesia, the TVE reform in 1984, which changed the senior secondary technical curriculum in order to focus upon the preparation for entry either to the world of work or to post secondary studies, appears to have changed student perceptions of TVE.

While Marklund, (1988) concluded that the vocational lines in Sweden's Upper secondary schools have become more attractive than before owing to changes in entrance requirements for universities and other higher education. institutions in 1977. As the result of the 1977 reform it is not necessary to have a three-year academic upper secondary line to be accepted in higher education. The distribution of students between different lines has subsequently changed. Between 1971 and 1981, the vocational line population sharply increased from 19 to 37 per cent as the result of its increases in scope. Evans and Brian (1987) argue that the experience from technical and vocational education initiative (TVEI) in the UK reveals that NVEI options in each school

> *"tend to be disproportionately filled by the average and less able pupils though the emphasis varied slightly from school to school. Indeed in this respect, it seems that a much greater injection of official money alone into the system would not alter this pattern" (p. 78)*

As stated by Wright (1988), there is a conflict in African countries between the beliefs of governments that vocationalization of education is essential for national

development, and the nature of vocational education as perceived by students and their parents. i.e. as a preparation for low status occupations. Thus, it is felt to hinder students from upwards mobility to high status occupations which is the means for social mobility and, perhaps, for higher earnings. Similar views were found by Thompson (1981), Al-Ali (1993), and Whiteside and Zhang (1993).

What is seen by the government about vocational and technical education, i.e. an important tool for national development, will not change the negative responses of students who resist any attempt to make them choose vocational and technical subjects. The main purpose of establishing a committee for technical education in 1978 in the Sudan was to study the reluctance of students to follow technical and vocational streams even though there was a high demand for a skilled work force for national development. Wright, (1988) suggests that this conflict can be solved if "strategies have been worked for influencing pupil's aspirations towards an acceptance of occupations related to these subjects or efforts have been made to develop diversified programmes which will not be perceived by pupils as being merely preparation for low status occupations" (p.124).

Both options are complex and difficult to achieve. The first solution depends on a deep knowledge of factors which may influence student's aspirations and perceptions while the second depends on knowledge of different alternatives for the structure and organisation of TVE curricula. When these

factors and other related problems are clearly identified and understood, then how diversification can work in different school settings can be understood. The main problem here is how to design a curriculum with the mix of general education and TVE in secondary schools in a way which students can be prepared with skills necessary for the labour market and which, at the same time, leaves the door open for them to continue on to higher education. Once this type of integrated curriculum has been designed, the perceptions of students and their parents may be changed in favour of TVE.

Moreover, the extent to which higher education institutions and the Board for the distribution of secondary school leavers accept vocational and technical subjects and recommended them for admission to higher education needs to be renewed. Al-Aaqib (1974) concluded that only when TVE qualifications are considered as a requirement for admission to higher education, the perceptions of parents about traditional education systems will be changed in favour of TVE. Other form of incentives might also be introduced to attract good students to this type of education.

The General Conference of UNESCO in Paris, at its eighteenth session from 17 October to 23 November 1974 recommended a new system of life-long education in which vocational and technical education should be an integral part. UNESCO stressed that It should be built in a way that no barriers should exist between different levels and areas of education between education and employment, and between schools and society. This can be achieved by considering technical and

vocational education as an integral part of all streams of general education in an open and flexible education structure. To accomplish this, UNESCO felt that TVE should start with a broad basic vocational education in order to facilitate vertical and horizontal links. This should be within the educational system, as well as between school and the labour market. UNESCO saw that this system should be designed so that technical and vocational education:

1. Is an integral part of basic general education for every individual.
2. May be freely chosen to prepare individuals either for an occupation or for further education.
3. Allows access to all aspects and areas of education at all levels by being built on a solid general education.

Ball, (1991) identifies a simple model of learning for life which encompasses the same ideas as recommended by UNESCO.

For the implementation of this life-long education, counselling and guidance are crucial requirements for the selection for different fields depending on students' abilities and interests, as well as the identification of the wide opportunities for them within each level and from one level to another. Neither of these requirements is available in the Sudanese educational system. No counselling services are available in the schools, and no training for this kind of services exists in any of the teacher training institutions or universities. The only available methods of selecting students within and between levels are

examinations. In-service training should be provided in the field of counselling and guidance for the short term needs of some of the current school teachers. In the long term, counselling and guidance programmes need to be introduced in the colleges of education and other teacher training institutions.

3.6.4 Academic requirements for entry to higher education make it difficult for vocational and technical school leavers to be accepted in higher education institutions. The existing procedure for the entrance into all higher education institutions is to consider only academic subjects for this purpose. Although most of the vocational and technical school students' time is devoted to technical subjects, they receive no credit for technical subjects. All credits are for academic subjects with the result that there is little opportunity for such students to attend higher education.

This condition leaves TVE school students in an educational cul-du-sac. The question which needs to be addressed here is how can we expect students and parents to choose such an education as an option. However, many universities have accepted that two technical subjects may be considered for admission to higher education starting from 1992/1993 academic year. These subjects are shown in the guide to admission to higher education 1992/1993. Al-Aaqib (1974) argues that the belief by the authorities of different universities that academic stream graduates at the secondary school level are more appropriate for higher education is a

false one because the curricula in the universities have been designed to suit the academic stream students.

Al-Aaqib (1974) believed that there are many advantages which make technical education at the secondary school level a suitable foundation for higher education:

1. The opportunity to meet the demand of higher education as well as the labour market needs.

2. The possibility of making an early evaluation of students' academic and practical abilities as well as their interests.

3. Technical education (especially at secondary school level) is the most suitable time for student psychological development when they see themselves as emerging adults.

Rossetti et al, (1990) found the main reason for students not enrolling in vocational education is the perception that they cannot subsequently schedule vocational and college courses. Similar view was mentioned by Price (1985), Plihal and Rehn (1986), Fratz, Strickland and Elson (1988). The 'back to the basics' movement in the United States of America recommends that the academic requirements of public high schools and training institutions should be strengthened. Marie, (1988) believes that this movement would have a major effect on secondary vocational education programmes because there would not be room in the curriculum or in the schedules of individual students to accommodate both.

He continues to argue that the assumption made in several reports by prestigious groups about American educational

reform and improvement, for example, Nation at Risk, (1983), the Carneale Report (1983), Academic Preparation for College (1983), the Paldela Proposal (1982), Tomorrow's Teachers (1986) and What Work (1986), all suggest that the most suitable way for preparing all students for life is to add more academic courses to the curriculum. As the result of this movement many unanswered questions have faced educators. Shanahan, (1989) mentioned some of these questions: how can a curriculum be designed to meet the diverse needs of all students? How will the increased academic requirements affect participation in vocational education?

To reduce the effect of the new academic requirements on vocational and technical education, Marie suggests the following solutions:

1. The need to balance the academic and vocational programme should be clearly stated.

2. Vocational teachers should be trained to have the skills to incorporate the practical and academic aspects of different subjects.

3. Attention should be given to the recruitment of quality students.

4. The necessary changes should take place in the curriculum to make time available for vocational subjects. Emphasis should be given to attitudes towards work rather than training for specific skills. Technology should be an essential element in any vocational programme.

5. Vocational teacher training programmes should be prepared in a way that will produce technology-oriented teachers with skills in computing, teaching conceptual and abstract thinking, and skills on how to incorporate basic subjects into the vocational classroom. A similar view was stated by Phelps and Hughes (1986).

3.6.5 The availability of well trained practical subject teachers is crucial, as is investment in the training of teachers well ahead of any change. Teachers for TVE subjects should be well trained and should have, at the same time, industrial experience. Such teachers, with these skills and experiences, are not readily available. The report prepared by the representative of the Sudan in the International Symposium organised by UNESCO about transition from TVE to work indicated that a large number of those who join the teaching profession acquiring experience in teaching and developing that experience by practice and training through training institutes which administered by the Ministry of Education and Guidance. However, at that time, most teachers were trained abroad.

The main problem which is facing the Technical Section in the Ministry of Education is the training of qualified industrial secondary school teachers because:

- These types of teachers are not available.
- Technical secondary school leavers have been employed as teachers at the same level because of the reluctance of

graduates to enter the teaching profession in the field of TVE (Table 3.12).

- The scarcity of opportunities for qualifications and training. Table 3.12 shows the number of current technical education teachers according to their qualifications and training. For this purpose, in-service training should be introduced in order that current teachers can gain industrial experiences and update their skills. Full time courses should be introduced to produce technical and vocational teachers for the country's long term needs. But this may result in two problems. Either a rise in salaries of the trained teachers will be needed to keep them in the profession, or they will leave to work in industry, self-employment or the neighbouring Gulf States.

This is the experience of graduates from the Higher Technical Teacher Training Institute (H.T.T.T.I) which was established by UNESCO at Khartoum Polytechnic (now Sudan University of Science and Technology) in the early 1970s to prepare teachers for technical secondary schools in the fields of building and construction, and electrical and mechanical engineering.

Most of the graduates became employed in industry or other enterprises, or they left the country. Because of this, the Higher Technical Teacher Training Institute was closed and a small department of education, as part of the College of Engineering, was established to recruit graduates with three year Diplomas from different technical fields of study. They stay for one year to be acquainted with skills in teaching

Table 3.12 *Numbers of current technical teachers according to their qualifications and training and the number of teachers required for the four-year plan 1991/1992- 1994/1995*

The section	Current availabl e numbers and %	Qualified and trained	Qualified but not trained	Qualified under training	Graduates of two years technical institutes	Graduates of secondary commercial Not qualified	Shortages of secondary industrial Not qualified	Shortages in 1990/1991	The numbers of teachers needed for the four-year plan 1991 - 1995			
									91/ 92	92/ 93	93/ 94	94/ 95
Commercial Education	197	51 (25.9%)	62 (21.5%)	8 (4.0%)	29 (14.7%)	·47 (23.9%)	-	-	50	50	50	50
Agriculture Education	83	32 (38.0)	29 (35.0%)	12 (14.5%)	-	10 (12.0%)	-	-	-	-	25	40
Girls Technical Education	20	8 (40.0%)	8 (40.0%)	2 (10.0%)	1 (5.0%)	1 (5.0%)	-	-	13	22	11	22
Industrial Education	576	166	26	6	154	186	40	89	40	29	651	29
Total	876							89	103	101	737	141

Source: *The Report of the Committee for establishing the College of Education of Sudan University 1991*

methods, the use of instructional technology, methods of assessment and other related educational subjects. This is the only available institute for preparing TVE secondary school teachers in the whole country.

In 1991, this Department was made the base for the development of the College of Education. (The report of the committee for the establishment of the College of Education at the Sudan University of Science and Technology). Hashim (1992) argues that the Ministry of Education will rely mainly on this college for the training of its current teachers and to produce qualified and trained technical teachers in the future. To attract technical and vocational teachers, different forms of incentives are essential. These may be in the form of higher wages, scholarships to study for higher degrees or incremental promotions.

3.6.6 The experience of other developing countries following the vocationalization of their secondary schools is useful. For example, Tanzania, Colombia, Zimbabwe and Siera Leone show that the expected results from the diversification of secondary education have not been achieved (Lauglo and Lillis, 1988).

1. Psacharopoulos (1988) in his study of curriculum diversification in Tanzania and Colombia provides evidence that the objectives stated for the diversification of secondary school curriculum were not achieved. The result of the study indicates that:

- No difference is found in the opportunity of academic

and diversified school leavers to find a job.

- Students tend to change their fields of specialisation when they seek further training.
- The graduates of diversified schools failed to earn more than academic school graduates.
- Diversified schools are more costly than the academic schools.

2. In the case of Siera Leone several features of project design and implementation have had an important impact on the outcome of the projects implemented with the involvement of the World Bank. These are stated by Wright (1988) as the following:

- Problems in the design of the projects

* There was too much concentration on civil works and equipment at the expense of programme development and personnel training. Little attention was given to the content of a diversified curriculum.

* The selection of prestigious schools with good academic stream records for the project and in politically favoured regions means that there was less acceptance for the project.

* The training of technical and commercial teachers was neglected.

* When attention was given to the content of diversified programmes, greater confusion resulted. This was due to the difference between the training of teachers in technology (e.g. design technology) and the syllabus which was concentrated around the traditional crafts.

- Problems with implementation:

* In some schools, supplied equipment stayed for years without being installed because of the lack of skilled people, while other schools with skilled teachers had not received the necessary equipment.

* No arrangements had been made for the maintenance and repair of the supplied equipment.

* Lack of consumable materials (e.g. wood, metal etc.), which was assumed to be regularly supplied, resulted in excessive teaching of theory for subjects which were intended and assumed to be practical.

* Schools were left without any guidance about selecting what should be taught as part of the diversified curriculum. This resulted in different subjects selected in different schools and with no help being given to develop the content of each subject area.

3.7. Structure and Organisation of TVE

UNESCO produced several recommendations concerning the organisation of TVE:

3.7.1. Provision of TVE

TVE should be provided through full-time or part-time settings and both patterns should have equal status. Part-time programmes should be encouraged by providing them immediately after the completion of general education and to the highest level of formal education. Such qualifications should be equivalent whether acquired by full-time or part-time programmes.

In the full-time programmes both practical training and general education should be offered in the same educational establishment. While, in the part-time programmes, general

theoretical education and broad practical aspects should be provided in the educational establishment, specialised practical training should be provided in the work place. This can be achieved through:

1. The day release system:

In which the young workers or apprentices will be released for at least one day a week to attend educational establishments.

2. The sandwich system:

In which a period of time is alternated between the educational establishments and the work place.

3. The block release system:

In which workers are released for one or two short periods of at least ten to fifteen weeks per year to attend courses in an educational establishment. Most of these systems are being used in different developed and developing countries.

3.7.2. Characteristics of part-time study in the Sudan:

1. Part-time study is scarce in the Sudanese educational system. This may be because the educational system is not flexible enough for this type of education, or as the result of unavailability of enough places and teaching staff, or the unwillingness of employers to release their employees.

2. This type of study, where available, occurs in the evening and not in the day time for the reasons mentioned above. However, it proves, at least in Khartoum Polytechnic, to be

effective in reducing the cost of provision of technical education compared with day-time provision. This may be attributed to the participation of students in the cost of their education in the form of tuition fees; also the government does not have to be responsible for accommodation, transportation or food.

3. The available programmes have been gradually changed to concentrate in fields of study which are mostly theoretical with little practical elements e.g. business studies, management...etc. This shift was carried out because of the increasing cost of consumable materials; the fund which is provided by the government and tuition fees is not enough to cover the cost of these expensive programmes.

4. No link with industry or business is available now.

3.7.3. Vocational and Technical Programmes Content:

The trend now has started to shift from narrow-job-specific skills towards broad basic general skills, and the knowledge and attitudes needed to produce graduates having transferable skills to be able to cope with the changing job requirements caused by rapid technological change.

ERIC Clearinghouse on adult, career, and vocational education (1988) argues that the debate now concerns the appropriate role of vocational and technical education at the secondary school level. Should it provide specific skill training? Or should it prepare students for employability in general? Many writers have contributed to answering these questions. Johnson and Whittaker (1990) mentioned that "curriculum would reflect

a balance of social, technical, academic, interpersonal, personal survival, civic, and employability skills" (p.4).

Northwest Regional education lab. (1986) concluded that: "1) vocational education should be integrated with academic education. 2) Technical skills should focus on transferability 3) Employability skills are important and 4) Basic communication, occupation and problem solving skills need reinforcement in occupational preparation" (p.4).

Ascher (1987), specified that, as one of the principles which should be met by secondary vocational programmes, public school programmes should prepare students to have broad basic skills to be able to cope with rapid change. Preston (1988) stated that "it is pure folly to think that focusing on occupational skills without preparing students to achieve at an acceptable level of basic skills will lead to anything but unemployment" (p.7).

Zuga and Lindstrom (1989) identify six clusters of general work knowledge, skills and attitudes for secondary vocational educational programmes: applied academic skills; occupational communication skills (non-written); adaptability; personal management/self education; working with others and leadership. Colorado Department of Education (1990) identified a list of similar employability skills.

Poole and Zahn (1986), concluded that "neither academic skills nor vocational education alone could provide the skills needed for jobs in the future" (p.40). so public schools should prepare students for employment based on:

communications; employability skills and attitudes; management and leadership development; technology and computer science; family role; field experience and business operation and economics. This is shown in figure 3.2.

Figure 3.2 *A Model for Restructuring Vocational Education*

Secondary school Level
Courses open to all 9th-12th grade students

Communications	Employability skills and attitudes	Management and leadership development
Technology and science	Family and consumer living	Field experience
	Business Operations, Economics, and Entrepreneur ship	

Secondary Level Occupational Preparation Program
(Programmes open to interested Juniors and Seniors and based on broad labour market and geographical needs)

Home Economics and related occupations	Business Occupations	Agriculture and related Occupations
Technology Occupations	Marketing Occupations	Diversified Occupations

Source: Poole and Zahn (1986)

Poole and Zahn (1986) argue that is not clear how to do it and that change will not be easy. However, educators should think about how to achieve this objective of preparing students for a broad occupational field instead of preparing for a single job. Law and Pepple (1990) mentioned that there is a great deal of experimentation going on about integration.

Pautler (1986), indicates that a solid foundation of general skills and knowledge are needed by vocational education

students. A similar view is reflected in the recommendations of UNESCO which stated that Technical and Vocational education as a preparation for an occupational field should provide the foundation for productive and satisfying careers and should:

1. lead to the acquisition of broad knowledge and basic skills applicable to a number of occupations within a given field so that the individual is not limited by his education in his freedom of occupational choice, and later transfer from one field to another in the course of working life is facilitated.

2. at the same time offer a thorough and specialised preparation for initial employment and effective training within employment.

3. provide the background in terms of skills, knowledge and attitudes, for continuing education at any point in the individual's working life.

Wiemann (1989) concluded that the different didactic models used to impart occupational skills by different societies are very similar. The differences can be found by evaluation of the model when it has been implemented and its strengths and weaknesses have been observed. He mentioned that:

> *"the purpose of the didactic model is to assist in the organised acquisition of occupational skills required for the reproduction and development of society and economy (social and economic function) as well as in the creation of permanent employment opportunities for those who have completed technical and vocational education (individual and social function)" (p.33).*

The purpose of the didactic model is to answer where and how the occupational skills are acquired in relation to well defined learning goals. There are two types of learning systems, each of which can be achieved by a suitable didactic model. Figure 3.3 and Figure 3.4 show the different basic models of the organisation of TVE.

Figure 3.3 *Basic didactic models of TVE.*

On the job training	**Natural type of learning system** technical and vocational education as part of the jobs to be done at the workplace
Course instruction project instruction learning in school-run enterprises	**Artificial type of learning system** technical and vocational education in non- workplace institutions.

Resource: Wiemann (1989).

Figure 3.4 *Basic models of the organisation of TVE.*

On - the- job training
Occupational problems are solved in real work context. Emphasis of learning is on carrying out work under the direction of experienced staff; Occupational knowledge is acquired informally by learning rules gained from experience

learning / doing	technical communication	technical mathematics	technology
planning			
implementation		learning by sharing in the company's work	
control			
utilisation		working for the market	

Course instruction I
Occupational problems are broken down into learning sequences and strucured according to theoretical considerations in linear form. Learning takes place outside the real work context at a separate place of learning under the direction of full-time instructors.

learning / doing	technical communication	technical mathematics	technology
planning			
implementation			
control			course: turning
utilisation			course: gauging calipering

Course instruction II
Occupational problems are broken down into learning sequences and structured by subjects according to logical cosiderations. Learning takes place outside the real context at a separate place of learning under the direction of full-time instructors.

learning / doing	technical communication	technical mathematics	technology
planning	technical drawing		
implementation			course: gearing
control		course motion	
utilisation			

Project instruction
Solution of occupational problems is simulated by the construction of complex learning situations in which learning and doining are integrated. Learning takes place outside the real work context at a separate place of learning under the direction full-time instructors.

learning / doing		technical mathematics	technology
planning	integrational learning by making complex products		
implementation			
control			
utilisation			

School-run enterprises:
The solution of occupational problems takes place under quasi-real learning conditions in a school which is firm. On the-job training, course instruction and project instruction may be integrated. The school-run enterprise combines vocational learning with production for the market under the direction of full-time instruction.

learning / doing	technical communication	technical mathematics	technology
planning	integrational learning by making complex products for the market		
implementation			
control			
utilisation			

example

Source: Wiemann 1989, p40

Another method of organisation of TVE is the Modular of Employable Skills (MES) developed by the International Labour Organisation (ILO). It has been built on breaking down the technical fields of work into its main component tasks (occupational analysis). These tasks are called Modular Units (MU). Chrosciel (1989) defines the Modular unit(MU) "a modular unit is a logical and acceptable division of work within a particular job, occupation or field of work with a clear start and finish and which would not normally be further subdivided" (p.41).

The instructional materials to be used with the MES training programmes are called learning elements which consist of clearly specific learning objectives, lists of needed equipment and materials, lists of instructions, and assessment materials to check the progress. The ILO started a project to use the MES approach in Sudan in co-operation with the Department of Education at Khartoum Polytechnic. It was stopped after a short period of time because of the reluctance of the Polytechnic to recruit the personnel required to carry out the work.

Each of these models has its strengths and its drawbacks. The most appropriate development for the Sudanese vocational and technical education is, perhaps, the course instruction didactic model in which the integrated complex occupational skills are divided into smaller learning and practice units. These units are arranged in order of their difficulty i.e. from easy to difficult and from simple to complex to be mastered by students by moving from one training phase to the

next with the aid of highly developed educational technology materials in a separate place from actual work situations. Wiemann (1989) concluded that:

> *"The great advantages of course instruction, i.e. break-down into sequences, polyvalence, transparency and its regular nature, have contributed to the extraordinary spread of this teaching method initially in Europe and later in the United States, and also in technical and vocational education in the developing countries, for it has been found that course instruction can be adapted with relative ease to all societies, cultures and languages" (p.36).*

It has the advantage of flexibility for training students and preparing them for a variety of related occupations and activities instead of preparing for a single occupation. There are not enough places in industry and business to use on-the-job training methods, and the project instruction method is more expensive. School-run enterprise methods can also be used in combination with course instruction if the initial and running fund is made available until the returns from selling the products can cover the costs needed.

3.8. Diversification of secondary education in the Sudan

As stated by Robertson and Waltman (1990) it is not possible to borrow policies directly from countries with different cultural, educational and economical backgrounds. However, the experiences of these countries in the introduction of TVE have important value. This can be summarised in the following:

3.8.1. The different methods used to reduce the cost of provision of TVE:

The solution of this problem varies from one country to another but the common trend in most of these countries is the role played by industry and commerce. How can industry and the private sector be more involved in the provision of

vocational and technical training, and how can they participate more actively in the cost of this expensive type of education in the Sudan? No research is available about what employers think about TVE and its role in the development of enterprise and the country as a whole. In America the 'shared time' country vocational schools are used to reduce the cost of vocational training. To what extent can this type of school be used in the Sudan? It may be possible in the main cities where means of transport is readily available and schools are in close together, but it will be difficult in rural areas where schools are separated by long distances and where paved roads are not available.

3.8.2. The structure and organisation of TVE:

The main strengths of the Sudanese educational system are the foundation academic subjects for both academic and technical schools within the national curriculum of compulsory education up to age 19. This is a debate now in the UK which, after its long experience, found it necessary to reform its educational system in order to have a national curriculum with core and foundation subjects as stated by the Department of Education and Science (1989) and Finegold et.al (1990). The debate is about how to encourage post-16 students to stay in formal education (Raffe and Rumberger 1990). In contrast, in Sudan, students tend to stay in the formal education until 19 and they try hard to continue their higher education. However, the opportunity in higher education is limited although 10 more universities have been established in the

last two years which has resulted in more than a 100% increase in the entry to higher education.

The Sudanese educational system can be compared with Japan's in that it has similarities in the preparation of students mainly for higher education; presence of students in the formal education until the age of 19 and the role of the Ministry of labour in providing vocational education and training. However, the absence of any enterprise role in training in the Sudan is the main difference.

So the experience of Japan will not be particularly useful unless industry and business have an essential role in training secondary school leavers, and this is not expected in the near future because of the nature of industry and business enterprises in the Sudan. These are mostly owned by the government since the early 70s when most private enterprise companies were seized by the military government. However, the current government has adopted the policy of privatisation of some of the public enterprises. This has a direct effect on the labour market which is mostly controlled by the government with only a limited role played by the private sector. The youth labour market in the Sudan does not offer an attractive alternative to schooling because the opportunity to have a job with a secondary school certificate is not widely available and the wages for such jobs are too small.

The US practice of a comprehensive schooling system may be useful for the Sudan in the organisation of technical and vocational and academic subjects even though there is a difference in the body responsible for the qualifications. This is the Ministry of Education in Sudan and the individual schools in the US. The comprehensive national strategy adopted the comprehensive secondary school system in the Sudan in 1992. Many questions need to be answered here.

Will the school have a specialised curriculum or will it be a pre-vocational curriculum? If the former, is it possible to provide all these schools with the necessary equipment and qualified technical teachers? If the later, how will students be trained in the absence of any below-university institutions similar to the American community colleges or British Further Education colleges. The lessons from the community college system may be useful in this respect for training secondary school leavers.

However, because the foundation subjects in the Sudanese educational system are mainly academic, there is a need for more balanced subjects which include academic as well as technical and vocational aspects. What are the needs of the Sudanese labour market? What programmes are most needed now and in the medium term? No research is available to answer these questions. It may be more appropriate that a responsive body should be formed from the representatives of Ministries of Education, Labour, and Finance, and of schools, business and industry to prepare a plan for the short and long term development depending on the labour market needs.

In the absence of forecasting the actual labour market needs for different specialisation, different specialisation will result in a high rate of unemployment in some existing fields of studies, especially for academic and agricultural graduates. The scarce available resources should be utilised effectively and in an efficient way.

3.8.3. Experience of other developing countries:

The result of studies in most developing countries suggest that intended results were not achieved. What are the implications of this for the Sudan? Of course, unachieved objectives by the diversified secondary schools will not mean that Sudan has to stop any attempt at the introduction of technical and vocational subjects into the curriculum of secondary education. But the lessons from these countries do suggest that the result of these studies should be considered by policy-makers and educators in any attempt to diversify the secondary education system. And they have to think how their plan will be different from the plan of countries where they tried to adopt the diversification of secondary education. The following questions should be answered before any decisions concerning diversification take place:

1. How will the proposed diversified schools:

- Increase the opportunities of their graduates to find employment;
- Ensure that students will stay in their field of specialisation;
- Increase the earnings of their graduates;

2. What benefits would result which would balance the high cost of diversification of secondary schools? and How the programmes should be carefully designed and implemented?

The results from diversified secondary schools in some developing countries suggest that:

1. strong commitment of the government to change in the educational system, and to investment in training is essential for success.

2. Public awareness of the problem is important to ensure active participation in the funding and acceptance of the change.

3. The design and implementation phases should be carefully studied. This includes the training of TVE teachers, and curriculum development.

The experience from those developing countries which diversified their educational systems successfully and in a productive way suggests that:

1. The change should be gradual over a long time.

2. Close links need to be made with enterprises to cater for labour market needs.

3. Attention should be given to financial sources other than the governmental funding.

4. Quality should be maintained by recruitment of good instructors and students. This can be achieved only by applying incentives in different forms.

5. Flexible curricula should be prepared to be easily adjustable to labour market needs.

6. Continuous evaluation is necessary.

3.9. Summary:

3.9.1. Factors influencing the introduction of TVE in secondary schools curriculum:

Many factors may influence the introduction of technical and vocational subjects into the secondary school curriculum.

1. High rates of unemployment among secondary school leavers.

2. Shortages of skilled and semi-skilled people in the workforce and their effect on economic development.

3. Inequality of opportunities.

4. The need for employability skills in the curriculum of secondary schools.

3.9.2. The cost of the provision of TVE:

The provision of TVE is more expensive than the provision of academic education with considerable variations between the developed and developing worlds. Several methods are used to reduce the cost of the provision of TVE in both the developed and developing worlds which include shared-time vocational schools or centres; mobile training centres; close links with enterprises and schools and tuition fees.

3.9.3. Perception of students and their parents towards TVE:

Perceptions of students and parents towards TVE is important. The opportunities of students to attend higher education is an important factor in making TVE favourable to students and parents.

CHAPTER FOUR
RESEARCH METHODOLOGY

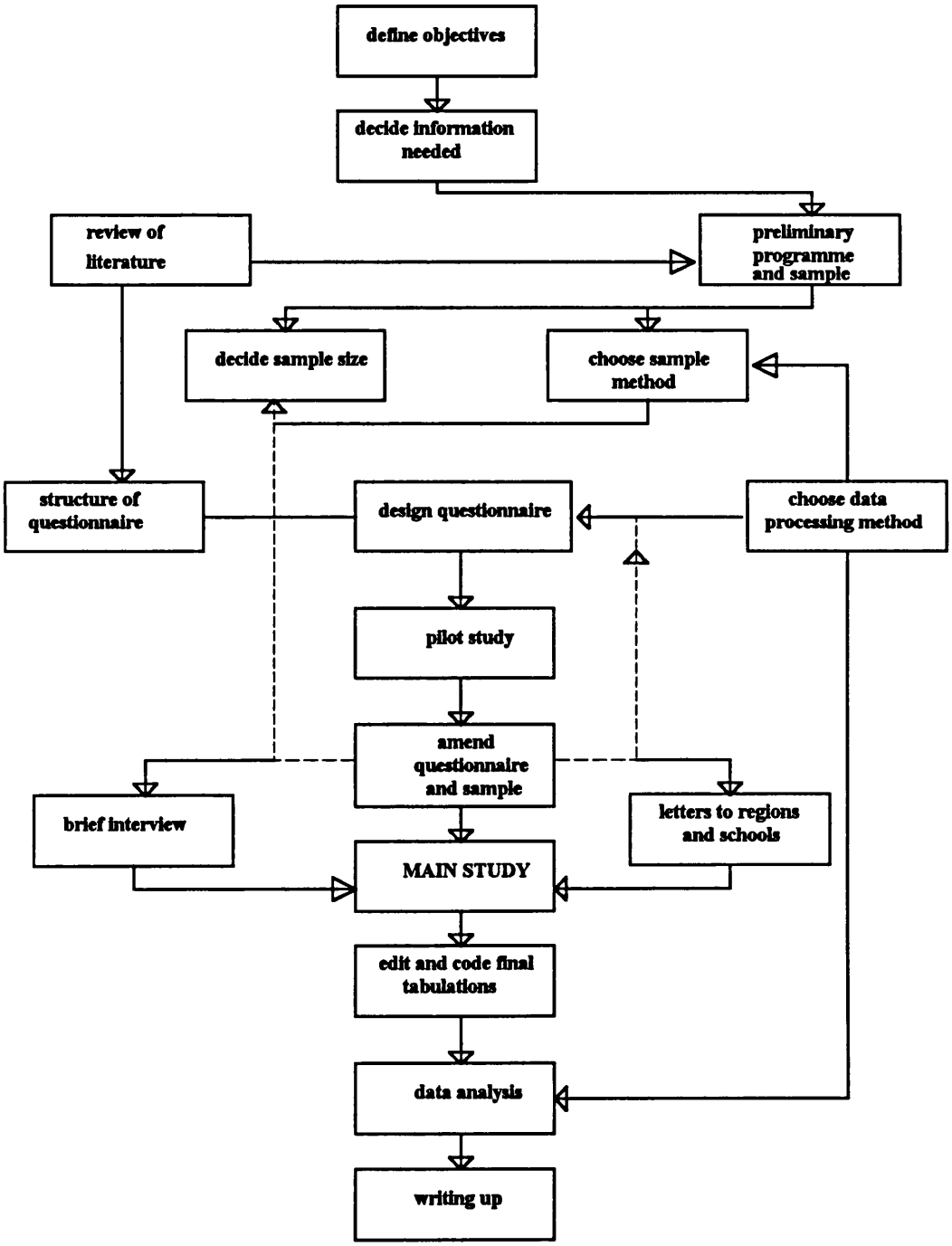
4.1. Introduction

The main objective of this chapter is to describe in detail the steps followed in designing the research, collecting data, and analysing and interpreting the results. The SPSS X statistical package of social science (1986) was used to analyse data.

As stated in previous chapters, there is a belief that students are reluctant to follow TVE courses because of their negative views of TVE. The reluctance of students and parents to accept TVE courses has resulted in a shortage of skilled and semi-skilled people in the labour force which has had a negative impact on the realisation of many objectives of developmental planning. One of the main objectives of the 1991 educational reforms was to reduce the barriers between theoretical and practical components of different subjects, and hence lead to more students studying TVE courses. This research has been an attempt to provide basic information about how students and parents view TVE, and the relationships between their views and the reluctance of students to follow TVE. Moreover, it has been an attempt to find out how the secondary school curriculum could be changed in a way that could encourage more students to study TVE courses and hence to enhance the development of TVE. The recommendations drawn from this study are expected to give the policy makers insights into how to encourage more academically able students to study TVE courses and to make

the necessary changes in the secondary school system to meet the economic development needs of both skilled and semi-skilled workforce. The planning stages of this study are shown in figure 4.1.

Figure 4.1 *Stages in planning the survey*



4.2. Research methods

Human beings continue to be found with seemingly endless problems and people have been trying to overcome these problems in order to have a better standard of living. During the current century, and owing to the development of systematic investigation techniques and empirical research, solutions for many problems have been found. There are phenomena that exist in the natural or physical world which affect people's lives, and there are social phenomena which have been created by people's behaviours and their interaction with each other. In respect of education, which is one of these social phenomena, a number of investigation techniques have been developed which are grouped according to Freankel (1990) into two main groups:

- Qualitative (subjective or interpretative) research methods: Interviews and observation are the most common approaches in this group.
- Quantitative (scientific or normative) research methods: Questionnaires are the most common approach in this method.

A combination of quantitative and qualitative methods in a study may strengthen the conclusions drawn from data. Cohen and Manion (1989) argue that consistent findings from different methods of data collection strengthen the result by decreasing the possibility of researcher biases.

It is very important to state that had more resources such as funds, time and trained personnel been at the disposal of the researcher, this would have offered greater opportunities to

use both qualitative and quantitative methods which would have served to triangulate the collected data for this research. As this study deals mainly with students' views of TVE, it was felt that if interviews could be carried out along with the questionnaires, more valid results could be expected to be obtained. Sections 4.3 to 4.3.7 present the main investigative techniques applied in this research.

4.3. Research tools

The present study draws upon two main investigative instruments, i.e. questionnaires and interviews. Informal discussion was also used. Each research tool used in this study, its merits, strengths and limitations will be dealt with in greater detail in this chapter.

4.3.1. Questionnaire

The questionnaire was used to collect data from the main samples of students, teachers and higher education staff members because of its advantages in a survey study. Ary (1972) indicated that questionnaires have the advantages that standard instructions can be given to all respondents and the personal appearance, mood or conduct of the investigator will not have any effect on the results. Best (1981), and Walker (1985) indicated that the person administering the questionnaire had an opportunity to establish rapport, to explain the purpose of the study, and to explain the meaning of items that may not be clear. Moreover, the availability of a number of respondents in one place makes possible an economy of time and expenses, and provides a high proportion of usable responses.

The researcher took into account the limitations of the questionnaire method, such as the difficulty of constructing a series of questions that have a clear meaning to every respondent (Oppenheim 1966), the risk of misinterpretation of some questions by respondents, and the possibility of a low rate of return. Many of the limitations were minimised. For instance, the difficulty of the construction of meaningful questions was reduced by the means of a trial study (Engelhart, 1972) and misinterpretation of some questions by the availability of the researcher. The rate of return was increased by using a classroom as a unit for the distribution and collection of the questionnaire.

There are different forms of questions. Questions may be in a closed form in which respondents select an answer from different options, or an open form, in which respondents make any responses they wish in their own words. Which form needs to be used is determined by the objectives of the particular question. The researcher used the closed form in order to carry out efficiently the quantification and analysis of the data (Borg 1981).

4.3.2. Interviews

Interviews were also used in this study to collect data from parents, administrators and from the Board for selecting secondary school leavers to higher education. Best (1981) considered interviews superior to other data collecting tools as he claimed that people are more willing to talk, the interviewer can explain the purposes of the investigation and any misinterpreted questions can be explained. However, the

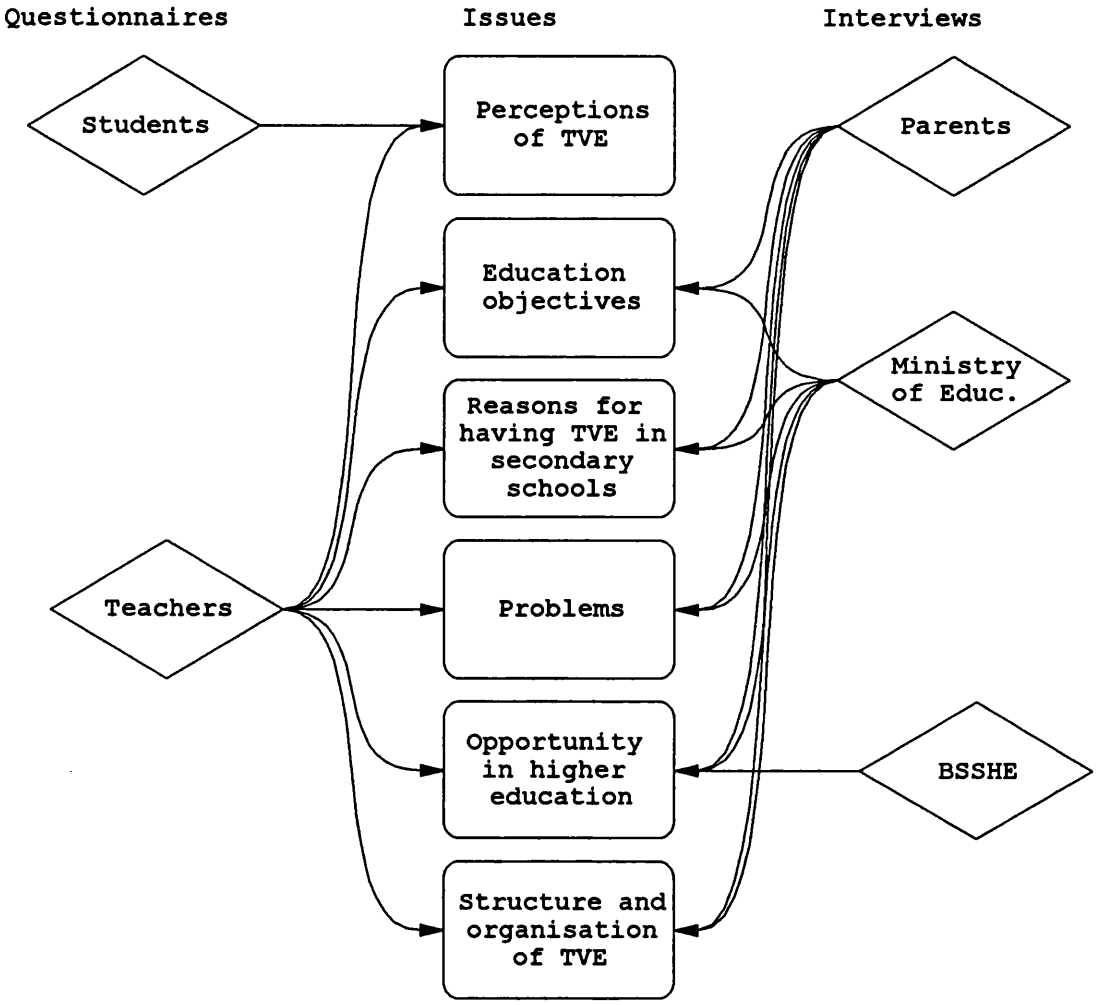
researcher is aware that interviews have limitations. For example, it is time consuming, there is the possibility of biases by both the respondents and the interviewer. Moreover, Travers (1964), and Powney (1987) mentioned that some sources of error may be present in interviews from both respondents and the interviewer.

The researcher tried to reduce the above mentioned limitations as much as possible. For example, interviews were used for relatively small numbers of respondents to minimise the time required to carry out the study. The expected biases and errors were minimised by carefully constructing and administering the interview schedule. A brief overview of the research and its key issues are shown in figure 4.2.

4.3.3. The construction of the questionnaire

Two sets of questionnaires were constructed in order to address the main research questions mentioned in chapter one. One set was for use with final year secondary school students (see Appendix A); the second was for use with higher education staff members and secondary school teachers (see Appendix B). Items were incorporated from other researches cited in the literature, while others were developed by the researcher drawing on his own experience of TVE in the Sudan.

Figure 4.2 The research method and its key issues



BSSHE: Board for Selecting Secondary School leavers to higher education.

4.3.4. Content of the student questionnaire

This questionnaire consists of three sections which looked at:

A. Personal background:

In order to find out the following characteristics of the sample of students.

1. Gender
2. Age
3. Type of curriculum followed by students
4. Father's and mother's occupations

5. The highest academic qualifications acquired by fathers and mothers.
6. Students' vocational aspirations

B. Students' views of TVE:

Students were asked to select their responses to a number of statements from five options. The options were in the following terms: *strongly agree, agree, neutral, disagree* and *strongly disagree*.

C. The items in the questionnaire were clustered in the following headings:

1. Parental influence about studying TVE courses

This part was used to find out the stress which parents place on the importance of TVE, the encouragement to their children to study TVE, any advice to them not to enrol in TVE courses, and the influence of parents, relatives and friends in the selection of the type of secondary school curriculum.

2. Employment opportunities provided by studying TVE

The items in this part were used to investigate students' views about the role of studying TVE courses in preparing them for a job directly after secondary school, helping them get a job in the future, providing them with good learning experiences and opportunities, and helping them to be better qualified for a career.

3. Equality of opportunity

This part was included to find out students' views about the suitability of TVE subjects for girls, and whether academic

and TVE subjects can be offered in the same, rather than separate schools.

4. Opportunity to attend higher education

Two items were included in this part in order to find out the effect of studying TVE courses on students' opportunities to attend higher education, and whether TVE subjects should have the same value as academic subjects for entry to higher education.

5. Information about TVE

This part was included to check the availability of information about TVE for students.

4.3.5. Content of teachers' questionnaire

This questionnaire consists of six sections which looked at:

A. Personal background:

This section was included to find out the following characteristics of respondents:

1. The status of the respondent. Whether a secondary school teacher or higher education staff member.
2. Gender
3. Subject specialisation
4. Age
5. Qualifications

B. Teachers' view of TVE:

Teachers' views of TVE were sought in the form of a scale consisting of several statements and five levels of agreement from which respondents select those which best represent their view. Again the five categories were: **strongly agree, agree, neutral, disagree and strongly disagree.**

C. The items in the questionnaire were clustered in the following headings:

1. Secondary education objectives

The main purpose of including this part was to find out respondents' views about the extent to which the existing TVE schools have achieved their objectives of preparing students for the labour market and for higher education.

2. The following factors which may influence the introduction of TVE in the secondary school curriculum were considered:

- The need to maximise employment opportunities
- Demand for a skilled workforce
- Technological change
- Attitudes to work

3. The following problems which may inhibit the introduction of TVE subjects into secondary school curriculum were considered:

- Economic issues
- Availability of qualified TVE teachers

4. Equality of opportunity

This includes the suitability of TVE courses for girls and the effect of introducing TVE courses in a secondary school curriculum on equality of opportunity of boys and girls.

5. Opportunity to attend higher education

This part examined

- The need to establish colleges for TVE graduates.
- The effects of providing TVE subjects in the secondary school curriculum on student's abilities to go on to higher education.

- The effect of allowing TVE subject qualifications for entry to higher education on student's selection of TVE subjects in secondary schools.
- The consideration of TVE subjects for the purpose of entry to higher education.

6. Structure and organisation. This part included:

- Where and when TVE should be offered.
- What subjects and skills should be provided for secondary school students.

4.3.6. Translation of the questionnaires

The items of the questionnaires were drafted, redrafted and then formally written in English. They were then translated into the Arabic language in order to be used by respondents in their own native language. This was done to achieve clarity of meaning, and to remove any language barrier. The translated items were checked by several post-graduate colleagues in the School of Modern Languages, at the University of Bath. Their recommendations were considered in the revision of both the questions and the accompanied general text (see Appendices A' and B').

Both the English and Arabic versions of the questionnaires were sent to Dr. Samia who is a staff member of the College of Education at the University of Khartoum, and to Mr. Mohammed Ahmed who is staff member of the College of Agriculture, Sudan University of Science and Technology. This was done in order to check the correctness of the construction and translation of the questionnaires thus enhancing validity (see 4.5.4). Their recommendations were

considered at the next stage and items and text were revised according to their recommendations. Finally, feedback obtained at the stage of transfer from MPhil to PhD in the School of Education was used to refine the questionnaires in line with the objectives of the study.

4.3.7. Construction and translation of the interview schedules

Three structured interview schedules were developed (see appendices C, D and E). Some questions which were similar to those used in the questionnaire for teachers were used, as well as some other questions which were specific to the particular group being investigated. Each interview schedule consisted of a statement of the purpose of the interview, an opening statement and then the questions in sequence.

The interview schedules were translated in the same way as the questionnaires were translated (see Appendices C', D' and E'). The main issues examined were:

1. Respondents' opinions about:
   - TVE at secondary school level.
   - Changing secondary education to be more technically and vocationally oriented.
2. Problems facing the reform of education to be more technically and vocationally oriented.
3. How to overcome the problems.

4.4. The pilot work

Pilot work was carried out in order to gain insights about each item of the questionnaire so that any difficulties in understanding the meaning of each item could be checked and corrected (see 4.5.4 for fuller discussion of validity). Carrying out the pilot work is a means of reducing the limitations and difficulties of constructing a set of meaningful and clear questions.

4.4.1. Samples for the pilot study

Three samples were selected for the trial study:

27 Sudanese higher education staff members, who were in the UK for study, were selected as a sample as they were representatives of most Sudanese universities and other higher education institutions, as well as having different fields of specialisation (see table 4.1).

A sample of 49 secondary school teachers was selected in a way which represented both academic and TVE areas, and male and female teachers. Table 4.2 represents the number of secondary school teachers and the main subgroups of academic, TVE, male and female teachers.

A sample of 58 third year secondary school students was selected in order to represent the same subgroups of people in academic and technical and vocational courses, and male and female students (see table 4.3).

Table 4.1 Respondents (higher education staff members)

The institutions	Number of respondents
University of Khartoum	10
Sudan University of Science and Technology	10
University of Juba	02
Algazira University	02
Abu Haraz College	02
Abu Naama	01
Total	27

Table 4.2 Respondents (secondary school teachers)

Teachers	Male	Female	Total
Academic	12	11	23
TVE	13	13	26
Total	25	24	49

Table 4.3 Respondents (third year secondary school students)

Students	Male	Female	Total
Academic	16	14	30
TVE	14	14	28
Total	30	28	58

4.4.2. Mailing the questionnaire for the pilot study

The English and Arabic versions of the questionnaires were prepared and sent to a colleague who had agreed to distribute them to the sample of higher education staff members. Half of the questionnaires were in English and the other half were in Arabic to check for the correctness of the translation. A copy of each questionnaire was sent to a secondary school teacher in the Sudan who prepared the required number of copies for the sample of secondary school teachers and students. For financial considerations, the trial study was carried out by a mailed questionnaire and this has meant that the size of the sample was not large. However, the rate of return was very high. It was 90%, 82% and 97% for higher

education staff members, secondary school teachers and secondary school students, respectively.

4.4.3. Results and discussions

The following results were obtained from the pilot study:

4.4.3.1. Contact with the Ministry of Education

A letter was sent to the Ministry of Education in the Sudan for permission to carry out the research (see appendix F). That permission was granted, together with the assurance of any necessary assistance in the completion of the survey. Letters were written to the selected schools for co-operation (see appendix F).

4.4.3.2. Contact with the head teachers of secondary schools

All the selected secondary schools authorities for the main study were contacted and all of them agreed to give all possible assistance for the distribution and collection of the questionnaires to both teachers and students.

4.4.3.3. Reconstruction of the questionnaires

Depending on the comments and suggestions of the respondents to the pilot study and the suggestion of Professor Jamieson, of the School of Education, University of Bath, some items were discarded and some were scrutinised. Then the questionnaires were revised and restructured in their final forms to be used in the main study. The final form of the questionnaires are shown in appendix A, B, A' and B'.

4.5. Setting up the main study

Depending on the results obtained from the pilot study, the main study was carried out for collection of data from different participants. The following part describes the processes involved in the main study.

4.5.1. Samples for the main study

The sample for this survey was similar to the pilot and consisted of higher education staff members, secondary school teachers and third year secondary school students. Additionally, parents, officials from the Ministry of Education, and an official representative of the Board for selecting secondary school leavers to higher education institutions were also in the sample.

Higher education staff members and secondary school teachers were essential to this study because of the importance of their roles in the success of any change, and the resistance the change would face from them if they did not accept it. Students in their final year of secondary school were considered because they are directly involved and more knowledgeable than any other set of students about the opportunities available for them to continue their education. They are very aware of various problems facing them upon completion of their secondary education. In addition, their views towards TVE as well as the reasons which made them hesitant to follow this type of education would be a key issue to investigate.

Parents were included in this research because of their influence upon the view of TVE which their children have, and their influence on their children's selection of particular types of secondary school education. The officials from the Ministry of Education were important because of their role as policy makers.

4.5.2. The size of the samples

1. Teachers:

The sizes of the samples of higher education staff members and secondary school teachers were set at 80 and 200 respectively. The actual numbers of respondents are as shown in tables 4.4 and 4.5.

Table 4.4 Respondents (higher education staff members)

Respondents	Male	Female	Total
Numbers	48	0	48

Table 4.5 Respondents (secondary school teachers)

Teachers	Male	Female	Total
Academic	68	32	100
TVE	53	23	76
Total	121	55	176

2. Students:

A sample of 700 students were selected from 13 secondary schools. Eight schools were academic and five followed a TVE curriculum, as shown in table 4.6. The respondents are shown in table 4.7 classified according to the type of school and by gender. The percentage of each subgroup to the total sample is also shown.

3. Parents:

10 parents were selected to find out their views of TVE because they are considered an important factor in students' selection of their secondary school curriculum.

4. Board for selecting students to higher education:

representative from the Board which selects Secondary School leavers was surveyed in order to find out the rules governing, and the method used for, the selection of secondary school leavers for different aspects of higher education.

5. Representatives from the Ministry of Education:

Four representatives from the Ministry of Education were chosen so as to gain the official ideas of the Ministry of Education, as well as their personal views.

4.5.3. Sampling techniques

In order to select respondents randomly from each population participating in this study, different sampling techniques were employed.

1. Secondary school students:

A cluster sampling technique was employed to select randomly the student sample and thus maximise validity (see 4.5.4 validity). As stated by Ary (1972) when it is difficult to list all the members of a population to select the sample, or the sample is very scattered,

> "it would be more convenient to study subjects in naturally occurring groups or clusters, that is, the researcher would choose a number of schools randomly from a list of schools and then include all the students in those schools in his sample" (p.156).

The following steps were used for the selection of the sample:

- The list of all secondary schools was obtained from the Ministry of Education and used to find the number of male and female schools. Table 4.6 presents the number of male and female respondents selected from each type of secondary school.

- Academic and TVE schools from the list of male and female secondary schools were selected by assigning a number to each school in the list; the numbers were put in a small box and mixed together and the researcher randomly draw the number required from the box.

- Arts and science classes from each selected academic male and female schools were selected by assigning a number to each class in the school; again the numbers were put in a small box and mixed together and the required number was randomly drawn.

- The same technique was employed to select TVE classes from each selected TVE male school, and from commerce and home economics classes in each selected TVE female school.

These sampling techniques were used to ensure that all desired categories would be represented. The process for the selection of the sample is summarised in figure 4.3.

Classes selected in each school were used as a unit for selecting the respondents in order to make the distribution

and collection of questionnaires easier and less time consuming.

Table 4.6 Number of respondents from different types of secondary school

School	Stream	Gender	Total
A	Academic - Science	male	60
B	Academic - Science	male	55
C	Academic - Arts	male	51
D	Academic - Arts	male	48
E	Academic - Science	female	50
F	Academic - Science	female	51
G	Academic - Arts	female	51
H	Academic - Arts	female	52
I	TVE*	male	93
J	TVE*	male	50
K	TVE - Agriculture	male	46
L	Technical - Commerce	female	44
M	Technical - Home Economics	female	49

* Schools I and J offer a curriculum in mechanical and electrical engineering, electronics, construction and commerce.

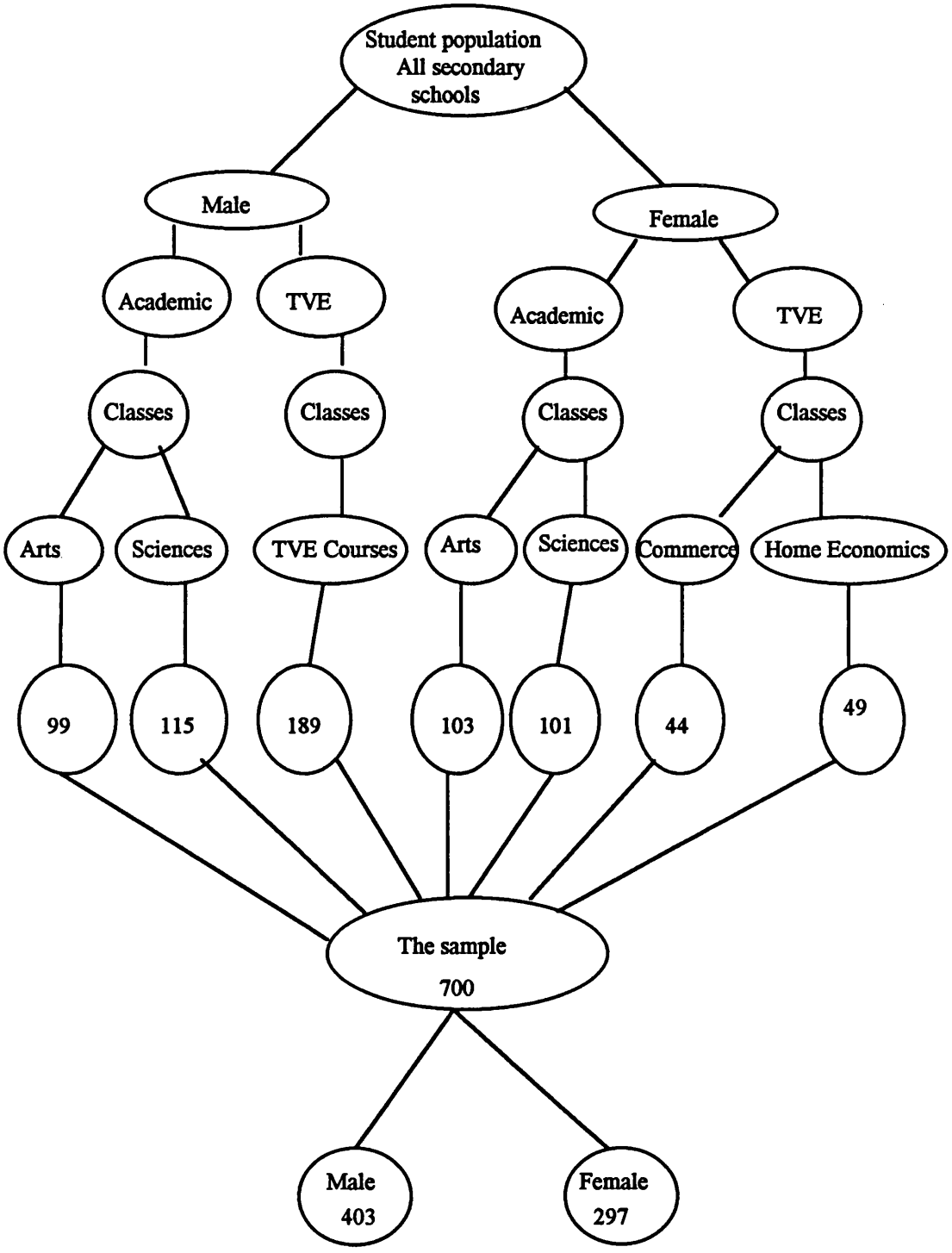
2. Secondary school teachers:

The clustering sampling technique was used to select secondary schools from which teachers were chosen by the following random sampling technique:

- Male and female schools were selected by assigning a number to each school in the list; once more the required number of male and female schools were drawn randomly from a small box containing the numbers of all the schools.

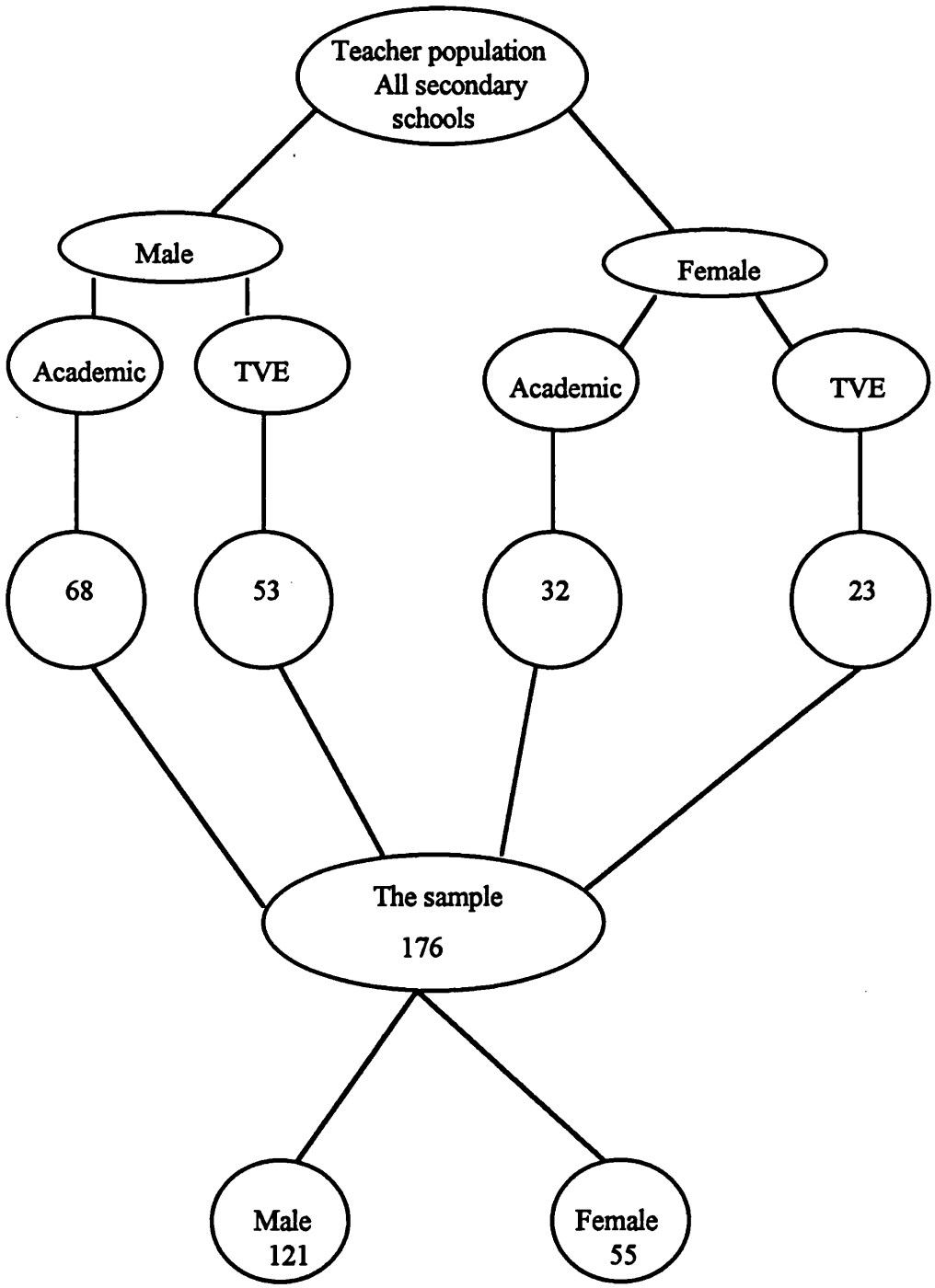
- In each selected male and female school, academic and TVE teachers were identified.

Figure 4.3 The process of selecting the sample of secondary school students



- Teachers from each group were selected by a simple random sampling technique as shown above. This process is summarised in figure 4.4.

Figure 4.4 The process of selecting the sample of secondary school teachers



3. Higher education staff members:

For higher education staff members, the number of potential respondents from each institution was selected in proportion to each institution's size.

- The number of respondents in each institution was identified.
- The total number of staff members from each institution was divided by the number required to find the sampling interval.
- The first respondent was selected randomly.
- Then the next respondent was identified by counting from the first respondent the number equal to the sampling interval. This was continued until all the respondents were identified.

4.5.4. Research instruments

There are two basic characteristics which are absolutely crucial for any research instrument. The presence or absence of these characteristics will influence the accuracy of the conclusions drawn from the research. As stated by Turney and Robb (1971), and Le Compte, Millory and Preissle (1992) these characteristics are reliability and validity which are discussed below:

1. Reliability

The basic concept of reliability concerns the consistency of data gathering and data interpretation. There are different ways of viewing reliability; the following procedures were used by the researcher to find the coefficient of reliability:

A test-retest process was used to find the coefficient of reliability (coefficient of stability) for the whole questionnaire. Item analysis was carried out to find the internal consistency of the scale of respondents' view of TVE by correlating the score in each item to the total scores.

• Test-retest (coefficient of stability) :

The researcher used a test-retest approach to find the coefficient of reliability (stability of results over time) for both sets of students' and teachers' questionnaires by administering them twice to the same respondents. For teachers, the interval was one month while for students it was two weeks. The interval between the two administrations is one of the important factors affecting reliability. If the interval is too short, respondents might recall their previous answers and the resulting coefficient of correlation would be artificially high. On the other hand, if the interval is too long, some changes may have occurred to respondents because, for example, of additional experience or learning. Such changes may lower the reliability coefficient. Ary (1972) specified the interval to be 20 days, while Rossetti et al. (1990) used a two-week interval between the two administrations.

The coefficients of correlation (coefficient of stability) for these tests have been calculated at .89 and .88 for teachers and students respectively which are considered high. According to Witte (1985) a coefficient of correlation in excess of .50 can be considered as strong correlation in most areas of behavioural and educational research.

- **Students' and teachers' scales (Item analysis):**

For the students' and teachers' scales, some items were grouped together in order to measure students' and teachers' views of TVE. Consequently, an item analysis was carried out in order to find out how each item was functioning within the scale. It was to be expected and desired that each item should contribute something to the assessment we were trying to make. As confirmed by Guilford (1965), Ferguson (1971), Chase (1974) and Verma and Beard (1981) the item is considered a good item if it discriminates well between those who achieved high scores in answering the questions in the scale and those who achieved low scores.

Generally, individual respondents were ranked in order of their total scores from the highest to the lowest. Then the distribution was divided into three equal parts i.e. those who gained high, middle and low scores. The average scores were then computed in each item for each group. The greater the difference between the average scores of those in the top and bottom in a given item, the better the item is functioning. According to the results obtained from this process any defective item was rejected and good items were retained.

The internal consistency (Cronbach's Alpha) was found for the students' and teachers' scales by correlating the scores of respondents in each item to the total scores (see Appendix G). As confirmed by SPSS (1986), Mehrens and Lehman (1978) and Fraenkel and Normann (1990), The Alpha model was used

because the data are in dichotomous form. Following Cronbach (1970), any item having a coefficient of correlation below .20 was discarded. However, it is not recommended that many items should be discarded as, although this will increase the internal consistency of the items, it will also decrease the content validity of the instrument. He states that:

> **"dropping items with low correlation may reduce validity. Dropping a particular item probably will not spoil the content validity of the test. The danger is that many of the poorly constructed items will fall in the same content area. When they are dropped the test loses representatives" (p.147).**

6 items were rejected from the scale of students' views of TVE, while 4 were rejected from the scale of teachers' views of TVE.

A split-half method was used to find the coefficient of reliability (internal consistency) for the scale of students' and teachers' views of TVE by scoring it after dividing it into two equal halves. Then the coefficient of correlation was calculated between these two halves. The Spearman-Brown formula was used to find the coefficient of reliability for the whole scale. This was done manually.

Results were found for split-half and Alpha as shown below:

	Student's scale	Teacher's scale
Split-half	0.87	0.95
Alpha	0.75	0.86

2. Validity

The following types of validity which related to this study were considered and checked:

To increase the content validity, the researcher followed the procedures below as confirmed by Mehrens and Lehmann (1978) and Gronlund (1976), i.e.:

- The objectives of the study were specified.
- Since the content is difficult to define, different issues to be considered by the researcher were stated depending on the review of the related literature and his own experience.
- A pool of items were constructed to cover each issue. The relevancy of each item to the issue to be examined was checked by consulting different experienced individuals as shown in 4.3.6 and 4.4.3.3 in this chapter, and by the pilot study.

Internal validity was enhanced by eliminating or minimising the effect of the following factors:

Loss of subjects was highly controlled especially for the sample of students where the classrooms were used as a unit for the distribution and collection of the test. The questionnaires were distributed and then collected as soon as students responded. So that the rate of return was very high (see 4.6.3 in this chapter).

The instrument was designed in a way that the respondents selected the appropriate answer from different options. So that the scoring procedure was not affected by the scorer as it didn't permit different interpretation of the result.

Additionally, the researcher distributed and collected the questionnaires himself.

External validity was checked by randomly selecting the respondents to make the sample representative of the population. (see the sampling technique). Moreover, the size of the sample was as high as the time and expenditure permitted. Here the size of the sample of higher education staff members was not large, so the data analysis was carried out on the whole sample. The following types of factors which affect validity were considered and checked:

A. Factors within the instrument

1. The directions for answering were written clearly so that respondents understood what they had to do.

2. Simple words were used so that the respondents understood every item. Some concepts which may have different meanings were defined.

3. The Arabic language was used to remove any language barriers. Improper translation may have an effect on validity by changing the meaning of the statement so it measured something different than what was intended originally. The questionnaires were translated in an appropriate way so that the same original meaning was maintained.

The above factors were checked by the following:

- Colleagues in the School of Education analysed the questionnaires as did people with experience of TVE and education in general.
- The pilot study was used to find out any ambiguous or unclear items or any inappropriate translations. Suggestions and comments from respondents were carefully checked and considered.
- Teachers in two TVE secondary schools (Omdurman Boys and Omdurman Girls school) were asked to comment on the designed questions. They stated that the questions were the most appropriate measure to investigate the issues raised by the research.

B. Other factors

1. Administration procedure.

   The researcher attended most of the classes and distributed the questionnaire by himself and explained the directions for answering and responded to any inquires.

2. Heterogeneity of the group

   The samples used in this research were selected randomly by a cluster sampling technique in which respondents were from different clusters and the classroom was used as a unit for selecting mixed ability respondents.

4. Interpretation of the results.

   An appropriate analysis of data tools was used according to the assumptions required to be met for applying each of these tools.

Finally, validity was checked by the multimethod triangulation (methodological triangulation). Cohen and Manion (1989) define it as "the use of two or more methods of data collection in the study of some aspect of human behaviour" (p. 269)

'Within methods' and 'between methods' were identified as categories of methodological triangulation. The former is used as a check of reliability while the later is used as a check of validity. As stated by Cohen and Manion (1989): "the between methods approach embraces the notion of convergence between independent measures of the same objective" (p. 275)

Informal discussions after the collection of the questionnaires, were held with students, about the issues raised in the questionnaire. Some insights were drawn about their views of TVE. These insights were checked with the result of the analysis of students' responses to different issues. Both methods revealed similar results. Additionally, informal discussions were also held with a number of teachers in different schools to find out their views of TVE and to compare views with their responses to the questionnaire.

4.6. Administration of the questionnaires and interviews

The following steps were followed in order to collect data:

4.6.1. Preparation of the time-table

The head teacher of each selected school was asked to indicate a suitable time for the distribution of the questionnaires to students. An agreement was reached to

devote the time specified for two lessons in each school for the distribution of the questionnaires to students.

4.6.2. Distribution of the questionnaires

The questionnaires were distributed with the assistance of some teachers in each school. The researcher attended most of the classes when the questionnaires were distributed in order to answer queries or discuss any problems or difficulties. In each class the purpose of the investigation, the instructions and the procedure to follow in answering the questions were carefully explained. The collection of papers from respondents was followed - in many schools - by an informal discussion. Teacher's questionnaires were distributed at the same time and collected after two weeks.

4.6.3. Rate of return

Most of the distributed questionnaires were collected from students at the time. Some students were absent at the time of the distribution of the questionnaires which resulted in a small drop in the number of the respondents in the sample.

For teachers, 178 out of 200 responses were received (return rate 89%). This very satisfactory rate of return is attributable, in part at least, to the time chosen for the distribution of the questionnaires which was the beginning of the academic year. Also, it was due to the co-operation of head teachers and teaching staff. The rate of (59%) from higher education staff members was lower perhaps because they were engaged at the time in preparations for, and administration of final examinations.

4.6.4. Administration of the interviews

Some of the interviews were carried out by the researcher while some were left to be carried out by a fellow secondary school teacher. The time available was not sufficient for the researcher to complete the whole job himself.

4.7. Data Analysis

All the completed questionnaires were scored from 5 to 1 for *strongly agree, agree, neutral, disagree* and *strongly disagree* respectively for positive statements and in a reverse direction for negative statements i.e. from 1 to 5.

4.7.1. Variables

Arising from the review of related literature and author's personal experience, the following variables were identified as relevant to this research:

- **Teachers:**

1. Status:

Both secondary school teachers and higher education staff members were considered in this study as having an important role in the development of TVE at the secondary school level. The former in the preparation of students to attend higher education, and the later in accepting students to continue their education. Their view of TVE is, therefore, important. This variable was used to compare secondary school teachers' and higher education staff members' responses to different issues examined in this study.

2. Gender:

As shown in Chapter 3 there are only 20 TVE secondary schools for girls, and these offer mainly commerce and home economics studies. The commonly held opinion in the Sudan is that girls should study courses which lead them to occupations which do not require manual work. Any expansion of TVE for girls thus requires the acceptance that females can and should follow a TVE curriculum. This variable was used to examine if there is a significant difference between male and female teachers' views about different issues raised in this study.

3. Specialisation:

As stated by Poole and Zahn (1986) neither academic skills nor vocational education alone can provide the skills needed for jobs in the future. The trend is now to integrate both academic and TVE subjects. Any change requires the acceptance of this by both academic and TVE teachers. This variable was used to compare responses of academic and TVE teachers in respect of different TVE issues.

4. Age:

The effect of technological change on TVE programmes has been increasing sharply during the last decade. Teachers were divided into different age groups to find out the view held by different generations about TVE and its development. Teachers were divided into three categories. Less than 30 years, between 30 and 45, and more than 45 years.

5. Qualifications:

Education is one of the important factors determining socio-economic status, and it is a means to higher status occupations. As mentioned by many researchers, socio-economic status has an important role in an individual's views about TVE. This variable was included to examine the views towards TVE held by teachers having different qualifications. Teachers were divided into 3 groups: holding qualifications lower than a university degree, having a university degree, and having a post-graduate degree.

- **Students**

1. The type of school in which the student is studying, i.e. Academic or TVE school, was considered in this study in order to find the effect of students' exposure to TVE subjects on their view of TVE. As noted by Slamet (1990), following exposure to vocational education, students should have either much more positive or more negative attitudes, compared to those who were not exposed to vocational education.

2. Gender:

The opportunities for women in the Sudan for education is now increasing; however, girls still follow a mainly academic curriculum and there are few opportunities for them to follow TVE courses. Additionally, there is the publicly held opinion that jobs requiring manual work are not suitable for females. This variable is considered in order to examine the effect of gender on the respondents' view of different issues related to TVE.

3. Age:

Several studies found that age has an effect on how students perceive TVE. (See Slamet 1990). This variable was included to find if there were considerable numbers of students in the sample younger or older than average age, so that the effect of age on students' responses to different issues could be analysed. Students were divided into three age groups. Those who were below 18, those who were 18 or 19, and those above 19 years of age. 18 and 19 were considered the normal average age for students in the final year of secondary schooling. For details of the number from each group (see Chapter 5).

4. Occupational aspiration:

Several studies have found that student's vocational aspiration has an effect on their view of TVE. (See Akintode 1988). The opportunity for students to follow TVE courses and attend higher education is limited, and hence their opportunity to have high status occupations. To examine the effect of occupation aspiration on the view held by students about TVE, six levels of vocational aspiration were identified based on the classification of parental occupations used by Hassan (1991).

5. Socio-economic status:

Rossetti et al. (1990) identify remote external reasons as a third category of barriers that influence students against enrolling in further educational pursuits. He included in this category the socio-economic status of students, and parental educational levels. From experience in the Sudan,

it was believed that students' parents who have higher education qualifications and/or occupations tend to seek to prevent their children from following a TVE curriculum. This variable is considered in this study in an attempt to examine the effect of socio-economic status on students' view of TVE, and to find the distribution of students with different socio-economic status following the different curricula. Socio-economic status was taken as the composite of fathers' and mothers' occupations and their education. This is similar to what was used by Shashaani (1993). For details see 4.6.1.1 (below). Additionally parents' education and occupation were examined separately.

4.7.1.1. Socio-economic status

The factors which comprise socio-economic status and the weight given to each factor are viewed differently by different writers. Hollingshead and Redtich (1958) considered fathers' education as the most important factor in their index of social position and gave it the highest weighting while other factors were given a lower weighting as shown below:

Factors	Weight
Father's occupation	9
Residence	6
Father's education	5

Again, father's occupation was given the highest weight by Warner et al. (1960) while they omitted education entirely from their scale below:

Factors	Weight
Occupation	4
Source of income	3
House type	3
Dwelling area	2

Parents' education was given a higher weight followed by parents' occupation in the Index of Social class developed by Brandis and Henderson (1970).

Factors	Weight
Father's education	1.75
Mother's education	1.74
Father's occupation	0.75
Mother's occupation	0.75

They considered father and mother as having virtually equal influence in the socio-economic status of the family. Hassan (1991) used the following socio-economic scale in his study in the United Arab Emirates (UAE) giving father's and mother's occupation the highest and equal weights.

Factors	Weight
Father's occupation	2.5
Mother's occupation	2.5
Father's education	2.0
Mother's education	2.0
Housing	1.5

Most of the mentioned studies suggest that occupation is the most important factor in any socio-economic status scale, followed by education and other factors. For the purpose of this study, a scale similar to that used by Hassan was considered, as Sudan has a similar cultural, educational and religious background. Father and mother were treated as having equal weight in their occupations and education. Both of them can follow the same educational ladder. Women, now, have a considerable effect in the income of the family as they have the right to work in a variety of jobs. The scale used in this study is shown in table 4.7.

Table 4.7 Socio-economic factors used in this study

Factors	Weight
Father's occupation	2.5
Father's education	2.0
Mother's occupation	2.5
Mother's education	2.0

1 Parent's education

Parent's education was divided into 5 categories. These were stated as "Without formal education", "Primary education", "Intermediate education", "Secondary education" and "University education"

2 Parent's Occupation

Two questions were included to determine father's and mother's occupation. The responses were grouped according to the classification of father's occupation used by Hassan (1991) in the UAE which was originally devised for Arab countries. The grouping of father's occupation used for this research was:

- Does not work (retired, unable to work)
- Unskilled worker
- works for himself (grocer, taxi driver or salesman)
- skilled worker (jobs which require specific kind of skills e.g. electrician, mechanic)
- office clerk (civil workers in offices)
- owner of projects or companies and employing a number of workers.
- teachers
- works as administrative chief or director (doctor, manager of a bank or large company, lawyers or police officer)

This classification reflects the level of economic importance of different occupations and their reputation and prestigious status in Arab countries in general and in the Sudan in particular. Mother's occupation was treated in much the same way with only slight difference. 5 levels were used instead of 8 as women usually do not work in particular jobs. The classification used for mother's occupation was:

- housewife
- unskilled worker
- office worker (civil worker, secretary)
- teacher
- doctor (practising medical activity in hospitals or clinics)

3. Scoring procedure

Both father's and mother's education were scored from 1 to 5. those without formal qualification had 1 point, 2 is given to those having primary education, 3 for intermediate education,

4 for secondary education and 5 for those with post-secondary qualifications including graduate and post-graduate qualifications. Father's occupation was scored according to the job classification mentioned before. Those who are not working have 1 point, unskilled worker have 2 points ... and those who work as administrative chief or director have 8 points. Mother's occupation was treated in a similar way but scored in according to a 5 point scale. Each mother's occupation was given the score which corresponded to that of father's occupation e.g. housewife has 1 point, unskilled worker 2 points, clerk and office worker 5 points, teacher 7 points and doctors 8 points.

4. Scoring socio-economic status

1. The raw score for each item was converted to a standard score because raw scores for each socio-economic status factor were found using different weightings. The standard score Z was found for each raw score in each factor by using the following formula:

$$Z = \frac{X - M}{SD}$$

X is the raw score.
M is the mean.
SD is the standard deviation.

2. Each raw score was then multiplied by the weight given to each factor.
3. The weighted scores for all parts of the socio-economic status were added together to find the final score for each respondent.

4. The respondents were classified into 3 categories i.e. those with high, middle and low scores.

4.7.2. Statistical analysis

Data were coded by the researcher and entered into the computer. Different statistical techniques were used to analyse the responses of students, teachers and higher education staff members. Mainly, nonparametric techniques were used in the form of a Chi-square approach to test for differences. Chi-square was considered to be the most preferable statistical procedure to be used for the analysis of data because the data were in the form of frequencies and the following assumptions were met. Hatch and Farhady (1982) stated that:

> **".....if you feel more comfortable with describing the data as frequencies (how many or how often) rather than amounts (how much) then Chi-square is probably the best statistical procedure to use" (p.227).**

1. Respondents were independently selected in a way that the selection of one respondent did not depend on the selection of another respondent.

2. Most of the expected values were large enough depending on the size of the table. Erickson and Nosanchuk (1977) specifies that for 2X2 tables, the expected values in each cell should be 10 or more. When the expected frequencies were fewer than 5 in a table longer than 2X2, one or more of the following were done:

- Some of the categories with small expected frequencies were combined in some sensible, non arbitrary way to have a larger expected values. This is confirmed by Guilford (1965), Ferguson (1971), Erickson and Nosanchuk (1977), and Hatch and Farhady (1982).

- Where the degree of freedom was less than 3 Yeast's correction was used. This is shown by Furneaux, Bynner and Murphy (1973) and Gupta(1991).

3 A small an excessively large sample sizes were avoided except for the sample of higher education staff members.

Additionally, a parametric technique was used in a form of t-test to check the result obtained by using a nonparametric technique. Fraenkel and Wallen (1990) indicated that one should:

> **"Use both parametric and nonparametric techniques to analyse data. When the results are consistent, interpretation will thereby be strengthened. When the results are not consistent, discuss possible reasons" (p.208).**

The researcher has concluded that the data used here can be treated as having an interval scale of measurement and hence there was the possibility of using the t-test because the following required assumptions were met:

1. The normality of the distribution:

The data obtained from students' responses are approximately normally distributed as shown in chapter 5. In addition to

that, the size of the sample is 700 which is large enough for the purpose of this study. Witte (1988) indicated that when using t-test you must assume that the underlying population is normally distributed. Even when this normality assumption is violated, the t-test retains much of its accuracy as long as the sample size is not too small.

2. The random selection of the sample:

The sample was randomly selected as all secondary schools were considered and the required number of schools were chosen randomly. Within each school classes were selected randomly from which individuals were then selected (see figure 4.3).

3. Level of significance:

.05 was used as a level of significance for rejecting or accepting the differences because this is the most commonly used level of significance in the field of education (Best 1981, Hatch and Farhady 1982 and Hays 1988).

4.8. Evaluation of the study

There were problems which arose during different phases of designing and carrying out this study. The researcher tried every possible way to minimise the effect of the following problems which would be likely to have an effect on the outcomes of this study:

1. Scarcity of previous studies in the field of TVE in the Sudan made the researcher rely heavily on studies carried out in other developing countries which have a similar cultural background. The researcher tried to find

information about TVE in the Sudan from different sources but without success. For example, UNESCO was contacted to find any related literature in the field of TVE in the Sudan (see appendix F).

2. Throughout the period of carrying out this study, financial problems had an impact on the design of, and the setting up and trialling of the main studies. The trial study was carried out by sending questionnaires to fellow teachers in the Sudan who distributed them to respondents. The researcher necessarily lost some of the insights which could have been gained if he had been in direct contact with respondents, and with the Ministry of Education. Such insights could have led to a better construction of different items.

3. The difficulty of transport for distributing and collecting the questionnaires in schools which were widely scattered across the country.

4. The time available for collecting data was insufficient to allow the work to be carried out as previously planned.

Although these problems have had an impact on this study, the actual research process has had the following strengths:

1. The sizes of the sample of students (700) and teachers (176) were large enough to facilitate an adequate statistical analysis. Moreover, the size of the sample and the process of its selection provide a solid base for a valid generalisation of the results.

2. The results were validated by using triangulation, i.e. results were checked by using more than one method for collecting data for the same issue. For instance, questionnaires and informal discussion were used. Additionally, for some issues, the same question was constructed in a different format to examine the same issue.

3. The data were analysed by using parametric and nonparametric techniques in order to increase the confidence which could be placed in the results obtained, and thus the conclusions which were drawn. No contradiction was found in responses of participants for different items.

4. For some issues similar items were used for students, teachers and higher education staff members. For example, the suitability of TVE subjects for girls, and the opportunity to attend higher education.

However, this study has its own limitations, and it has been necessary to take into account the effect of such limitations on the results obtained. The following are some of these limitations:

1. This study depended mainly on quantitative data collected by using questionnaires. Although the researcher tried to minimise the limitations associated with both the process

and the data collected, the effect of the following factors could not be totally removed:

a. The construction and translation of the questionnaires was a problematic process. Although the questionnaires were carefully constructed and re-constructed according to the suggestions from the pilot study and experienced individuals, generating clear understandable items for all respondents is a difficult task. The questionnaires were constructed in English and then translated into Arabic. As stated in section (4.3.6) all the necessary steps were followed to minimise the effect of translation. However, it was not possible to assess exactly the impact of both the construction and the translation of the questionnaires on the collected data.

b. The pilot study was carried out by sending questionnaires to a teacher in the Sudan to be distributed to respondents. This is why the researcher lost the opportunity to be in direct contact with students and teachers in order to have insights about the clarity of the meaning of each item and how it might be altered so as to be clearer to each respondent.

c. To what extent the results obtained represent the actual views of the respondents was not known. Students may be affected by different factors in the selection of particular answers. For example, at the time in which this study was carried out there was a discussion about changing

secondary education by adopting a policy of changing to a comprehensive school system.

2. Some regions were excluded from the study because of the limits on available funds and time, and the difficulty of travel in a country with such a huge area. The result of this study should be considered only for the area which was covered. Any generalisation beyond that should be treated with caution.

3. Owing to the time factor, employers were excluded from this study. Their views about TVE were important in order to gain insights about their willingness to provide training facilities and contributions to the financing of TVE courses at secondary school level.

4. The number of parents included in this research was not sufficiently high to make generalisations possible about their views of TVE, and their reluctance to accept TVE courses for their children. Again, time and finance were the main reasons for not including a larger sample of parents.

CHAPTER FIVE
RESULTS AND DISCUSSION

5.1. Introduction

The main objectives of this chapter are to:

- present the results of the responses of students, teachers and higher education staff members to different parts of the questionnaires.

- analyse, interpret and discuss these results, compare the responses of different samples, and link these with the review of literature, and with the background to the Sudanese educational system. Owing to the small size of the sample, higher education staff members' responses have been treated as a single sample.

The results presented here are mainly obtained from a quantitative study the limitations of which have been discussed in Chapter Four. This needs to be borne in mind in interpreting any of the results.

5.2. Characteristics of the study sample

418 (60.0%) students out of 700 were studying in academic schools while 282 (40.0%) were studying in technical and vocational (TVE) schools. 403 (58.0%) of the student sample was male while 297 (42.0%) was female. The distribution of the sample of students according to socio-economic status is shown in table 5.1.

Table 5.1 Characteristics of the sample of students according to socio-economic status

Characteristic of the sample	Socio-economic status						total
	Low		Middle		High		
	N	%	N	%	N	%	N
All the sample	432	61.7	224	32.0	44	6.3	700
Male	260	64.5	123	30.5	20	5.0	403
Female	172	57.9	101	34.0	24	8.1	297
Academic	211	50.5	169	40.4	38	9.1	418
TVE	221	78.4	55	19.5	06	2.1	282

Table 5.2 presents the characteristics of the samples of higher education staff members and secondary school teachers.

Table 5.2 Characteristics of the sample of secondary school teachers and higher education staff members

Characteristics	Secondary school teachers		Higher education staff	
	f	%	f	%
Male	121	68.8	48	100.0
Female	55	31.2	00	00.0
Below 30 years old	52	29.5	08	16.7
30-45 years old	99	56.3	23	47.9
Above 45 years old	25	14.2	17	35.4
Sub-university degree	23	13.1	00	00.0
University degree	143	81.2	14	29.2
Post-graduate degree	10	05.7	34	70.8
Academic subject teacher	100	56.8		
TVE subject teacher	76	43.2		

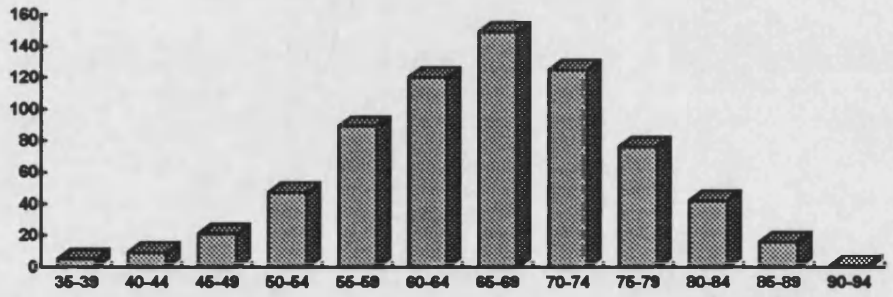
5.3. Students', higher education staff members', and teachers' view scores of TVE.

The view scores of the student sample are approximately normally distributed as shown in table 5.3 and figure 5.1. This result indicates that students had a positive view of TVE. Hence the null hypothesis No. 1 (students as a whole had a negative views of TVE) is rejected.

Table 5.3 Frequency distribution of students' view scores of TVE

View scores	f	%
35-39	05	00.7
40-44	09	01.3
45-49	21	03.0
50-54	47	06.7
55-59	89	12.7
60-64	120	17.1
65-69	149	21.3
70-74	125	17.9
75-79	76	10.9
80-84	42	06.0
85-89	16	02.3
90-94	01	00.1
N	**700**	
Mean	66.1	
SD	09.7	

Figure 5.1 A histogram of students' view scores of TVE



Scores

Different factors are expected to contribute to students' positive views of TVE. The result of this research indicates that students anticipate that following TVE courses will give them an advantage of being well prepared for employment, and hence will increase their opportunities to be employed after secondary school. Responses to statements about employment

opportunities provided by studying TVE courses reveal that there is a high incidence of belief among students with a wide range of characteristics (more than 75.0% of respondents) that studying TVE courses could:

- prepare them for a job directly after secondary school.
- help them get a job in the future.
- provide them with good learning experiences and opportunities
- help them to be better qualified for a career.

This expectation is shared by a majority (more than 80.0%) of higher education staff members and teachers who feel that studying TVE courses in secondary school could:

- help some school leavers find jobs
- prepare students for self-employment

To what extent will these expectations be fulfilled? The many problems in Sudanese secondary schools which hinder those schools from achieving their objectives have been stated by different writers. For example, Al-Amin (1986) stated that there has been a shortage of equipment and other facilities in Sudanese secondary schools. Omer (1992) considered that the existing TVE curriculum was unsuitable as a preparation of students for the world of work because it had not been designed to meet either local community or national needs. Abu Shanab (1992) discussed the lack of proper libraries, laboratories, workshops and other facilities and Hashim (1992) has stated that there has been acute shortage of qualified TVE teachers to the extent that TVE school leavers

have themselves been employed as a teachers at the same level.

A considerable number of teachers (56.2%) reported that they felt that previous TVE schools had failed to prepare students appropriately for working life. This result indicated that the (then) existing TVE schools with their problems were not capable of giving students any advantage in employment. How then can we now expect that students graduating from such schools will be well prepared to enter the labour market? There seems to be a mismatch here between expectation and the likely reality. Additionally, the result of studies in many developing countries: by Psacharopoulos (1988) in Tanzania and Columbia, by Chin-Aleong (1988) in Trinidad and Tobago, and by Wright (1988) in Siera Leone have shown that simply studying TVE courses did not necessarily reduce unemployment.

Parents' stress on the importance of TVE is likely to be another factor affecting students' views. A considerable number of students in this present research irrespective of their personal circumstances and characteristics, reported that their parents believe that TVE courses were important. For more details see table 5.27.

The efforts of the government since 1991 to implement the comprehensive secondary school, and the continuous discussions aimed at increasing the enrolment of students onto TVE curricula to 60.0% of those in secondary education, and the expectations of a positive change in this field have possibly had some effect on students' views of TVE. They have

been living and studying in an atmosphere where a positive promotion of TVE has occurred. A considerable majority of students tend to support the comprehensive school in which TVE and academic subjects are being offered in the same school. For more details see 'Structure and organisation' page 189.

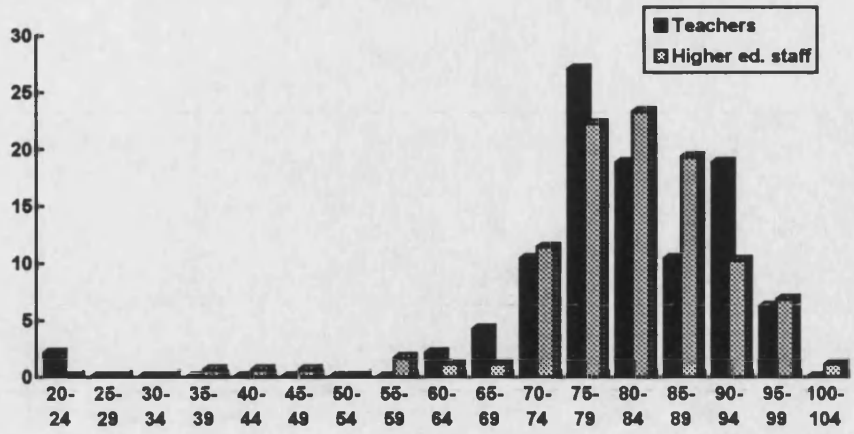
This predominantly positive view of TVE by students shown in this research easily are at variance with the earlier studies of Al-Amin (1986), and Abu Shanab (1992), or with the widely-held view amongst the public at large that secondary students in the Sudan have a negative view of TVE and hence had a reluctance to study TVE courses. It is certainly the case that a small portion of students in this present work (16.0%) also expressed a negative view of TVE. They particularly considered that TVE limits their opportunities to attend higher education (see table 5.33). These respondents were predominantly those who had ambitions to continue on to higher education and to take up professional roles, even if earnings can often be far less than that from 'blue-collar' occupations. Students with high status career aspirations tend to have the lowest view scores of TVE. This is shown in table 5.19.

Table 5.4 and figure 5.2 show that the view scores of the samples of higher education staff members and secondary school teachers were skewed indicating that they have similar positive views of TVE.

Table 5.4 Higher education staff members' and teachers' view scores of TVE

view scores	secondary school teachers		HE staff members	
	f	%	f	%
20-24	01	02.1	00	00.0
25-29	00	00.0	00	00.0
30-34	00	00.0	00	00.0
35-39	00	00.0	01	00.6
40-44	00	00.0	01	00.6
45-49	00	00.0	01	00.6
50-54	00	00.0	00	00.0
55-59	00	00.0	03	01.7
60-64	01	02.1	02	01.1
65-69	02	04.2	02	01.1
70-74	05	10.4	20	11.4
75-79	13	27.0	39	22.2
80-84	09	18.8	41	23.3
85-89	05	10.4	34	19.3
90-94	09	18.8	18	10.2
95-99	03	06.2	12	06.8
100-104	00	00.0	02	01.1
N	**48**	**100.0**	**176**	**100.0**
Mean	80.6		80.3	
SD	12.3		10.5	

Figure 5.2 Higher education staff members' and teachers' view scores of TVE



Scores

Higher education staff members' and secondary school teachers' very positive views of TVE and their responses in this research reflect their dissatisfaction with the previous educational system which they clearly consider responsible for a lot of problems facing the society today. More than 80.0% of higher education staff members and secondary school teachers reported that they saw the system as unsuitable for the Sudan's national development needs. This is shown in table 5.5.

Table 5.5 The existing secondary school system is unsuitable for the Sudan's technical and vocational needs

	Agree %	Neutral %	disagree %	Mean	SD
Higher education staff	81.2	8.3	10.4	4.2	1.0
Teachers	80.6	5.1	14.2	4.0	1.0
Male	80.2	5.0	14.9	4.1	1.2
Female	81.8	5.5	12.8	3.9	1.1
Academic	82.0	7.0	11.0	4.1	1.1
TVE	78.7	2.6	18.5	4.0	1.2
Below university degree	69.5	00.0	30.4	3.5	1.5
University degree	83.3	04.9	11.9	4.1	1.1
Post-graduate degree	70.0	20.0	10.0	4.0	1.3

They criticised the education system, seeing that it contributes to the high rate of unemployment among secondary school leavers (shown in table 5.6.).

Table 5.6 The secondary school system of education is a major cause of the high rate of unemployment for school leavers

	Agree %	Neutral %	disagree %	Mean	SD
Higher education staff	83.3	06.3	10.5	4.1	1.3
Teachers	80.2	05.7	14.2	4.1	1.3
Male	84.3	04.1	11.6	4.3	1.1
Female	70.6	09.1	20.0	3.8	1.2
Academic	84.3	04.1	11.6	4.3	1.1
TVE	70.6	09.1	20.0	3.8	1.2
Below university degree	86.9	04.3	08.7	4.4	1.0
University degree	79.8	05.6	14.7	4.1	1.1
Post-graduate degree	70.0	10.0	20.0	4.1	1.3

Moreover, these respondents felt that there was a shortage of skilled and semi-skilled people in the Sudanese labour market. This is shown in Table 5.7. As Al-Amin (1986) has commented, the shortage of skilled and semi-skilled people result in many economic development plans being unable to achieve their objectives.

Table 5.7 There is a shortage of skilled and semi-skilled people in the Sudanese labour force

	Agree %	Neutral %	disagree %	Mean	SD
Higher education staff	85.0	06.3	8.4	3.8	1.3
Teachers	73.3	07.4	19.3	4.1	0.9
Male	77.7	04.1	18.1	3.9	1.1
Female	63.7	14.5	21.9	3.6	1.1
Academic	69.0	07.0	24.0	3.7	1.2
TVE	79.0	07.9	13.1	4.0	1.1

Below university degree	78.3	04.3	17.4	3.9	1.3
University degree	72.1	08.4	19.6	3.8	1.1
Post-graduate degree	80.0	00.0	20.0	3.8	1.3

The high rate of unemployment and the shortage of skilled people in the labour force is linked in respondents' minds with the previous educational system. 57.0% of teachers believe that the educational system, which still considers the preparation of students to attend higher education as its main objective, to be responsible for these problems. Thus, they see that there is a need for a more effective secondary educational system which is more technically and vocationally oriented and which can cope effectively with the problems which the previous secondary educational system was incapable of dealing. Respondents feel that a new approach is needed for the preparation of students adequately for employment and/or higher education. This is shown in tables 5.8 and 5.9. This may be the case, but will not be sufficient in itself: a concentrated change involving both policy and practice will be needed.

Table 5.8 There is a great need for more TVE in the Sudan at this time to prepare students for gainful employment

	Agree %	Neutral %	disagree %	Mean	SD
Higher education staff	83.3	2.1	14.6	4.2	0.7
Teachers	89.2	3.4	07.4	4.0	1.3
Male	86.8	4.1	09.1	2.5	1.2
Female	94.6	1.8	03.6	2.5	1.0
Academic	88.0	2.0	10.0	4.1	0.9
TVE	90.8	5.3	03.9	4.3	0.8
Below university degree	86.9	4.3	08.7	4.2	0.9
University degree	89.5	3.5	07.0	4.2	0.9
Post-graduate degree	90.0	0.0	10.0	4.2	0.9

Table 5.9 If the curriculum at the secondary school level becomes more technically and vocationally oriented, students will be better prepared for higher education and work

	Agree %	Neutral %	disagree %	Mean	SD
Higher education staff	72.9	10.4	16.7	4.1	1.0
Teachers	81.8	05.1	13.1	3.8	1.2
Male	79.4	05.0	15.7	4.0	1.0
Female	87.3	05.5	07.3	4.2	0.8
Academic	79.0	06.0	15.0	4.0	1.0
TVE	85.5	03.9	10.5	4.2	1.1
Below university degree	73.9	04.3	21.7	3.9	1.3
University degree	82.6	04.9	12.6	4.1	1.0
Post-graduate degree	90.0	10.0	00.0	4.4	0.7

Additionally, teachers and higher education staff feel that this new approach is likely to contribute to the economic development of the country by supplying the labour market with well trained people and by coping with the technological advancement in the Sudanese society. This is shown in tables 5.10 and 5.11. This result supports Chrosciel (1989) who stated that the supply of well-trained and skilled human resources is an essential requirement to economic and industrial development. As noted earlier, this is necessary but, of itself, insufficient. Such supply without jobs and careers afterwards which can fully utilise such technological skills, will be equally problematic.

Table 5.10 Making secondary school curriculum more vocationally and technologically oriented will contribute to the economic development of the country

	Agree %	Neutral %	disagree %	Mean	SD
Higher education staff	81.2	08.3	10.4	4.3	0.9
Teachers	80.6	05.1	14.2	4.3	0.9
Male	86.0	04.1	09.9	4.3	1.1
Female	89.1	03.6	07.3	4.3	0.9
Academic	83.0	05.0	12.0	4.1	1.1
TVE	92.1	02.6	05.2	4.5	0.8
Below university degree	91.3	04.3	04.3	4.4	1.0
University degree	86.1	04.2	09.8	4.2	1.0
Post-graduate degree	90.0	00.0	10.0	4.1	1.2

Table 5.11 The extent of technological change in the Sudanese society is one of the main reason for offering TVE courses at secondary school level

	Agree %	Neutral %	disagree %	Mean	SD
Higher education staff	79.2	14.6	06.3	4.0	0.7
Teachers	83.6	07.4	09.1	4.2	0.9
Male	82.6	07.4	09.9	4.1	1.0
Female	85.5	07.3	07.3	4.2	0.9
Academic	83.0	07.0	10.0	4.1	1.0
TVE	84.2	07.9	07.9	4.2	0.9
Below university degree	86.9	08.7	04.3	4.3	0.8
University degree	83.3	07.7	09.1	4.2	1.0
Post-graduate degree	80.0	00.0	20.0	4.1	1.5

The finding that students viewed TVE positively supported recent studies carried out by Slamet (1987) who investigated the attitudes of senior high school students and their parents towards vocational education in Yogyakarta (Indonesia); Akintode (1988) who conducted a study to investigate the attitudes of secondary school students towards TVE in Lagos State (Nigeria); and Shuhil (1990) who conducted a study to investigate the attitudes held by

vocational school administrators, teachers and students in the United Arab Emirates (UAE). This research indicates an agreement between the views of students, higher education staff members, secondary school teachers and parents and indicates that a broad section of Sudanese society views TVE positively.

The rest of this section examines view score differences within the student and teacher populations in respect of gender, the type of curriculum followed, teaching

specialists, students' socio-economic status and occupational aspiration, and students' and teachers' ages.

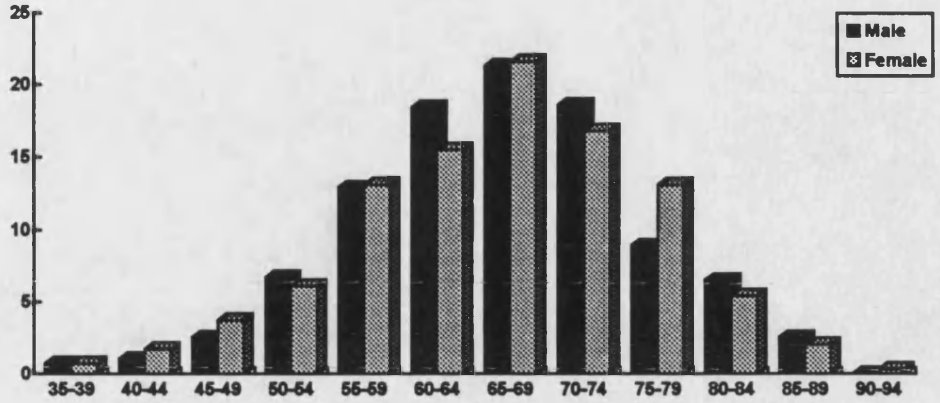
5.3.1. Students' and teachers' views of TVE (by gender):

Male and female students' have similar positive views of TVE. This is shown in table 5.12 and figure 5.3. Hence the null hypothesis No. 1.1 (there is not a significant relationship between secondary school students' views of TVE, and their gender) is rejected.

Table 5.12 Frequency distribution of students' view scores of TVE (by gender)

View scores	Male		Female	
	f	%	f	%
35-39	03	00.7	02	00.7
40-44	04	01.0	05	01.7
45-49	10	02.5	11	03.7
50-54	27	06.7	18	06.1
55-59	52	12.9	39	13.1
60-64	74	18.4	46	15.5
65-69	86	21.3	64	21.6
70-74	75	18.6	50	16.8
75-79	36	08.9	39	13.1
80-84	26	06.5	16	05.4
85-89	10	02.5	06	02.0
90-94	00	00.0	01	00.3
N	**403**		**297**	
Mean	66.0		66.2	
SD	09.5		10.0	

Figure 5.3 A histogram of students' view scores of TVE (by gender)

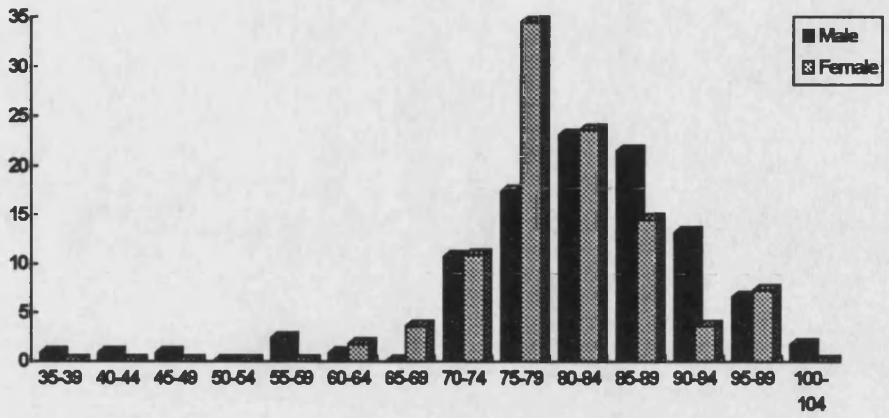


A similar result was found for male and female teachers' view scores of TVE as shown in table 5.13 and figure 5.4.

Table 5.13 Frequency distribution of teachers' view scores of TVE (by gender)

view scores	Male		Female	
	f	%	f	%
35-39	01	00.8	00	00.0
40-44	01	00.8	00	00.0
45-49	01	00.8	00	00.0
50-54	00	00.0	00	00.0
55-59	03	02.4	00	00.0
60-64	01	00.8	01	01.8
65-69	00	00.0	02	03.6
70-74	13	10.7	06	10.9
75-79	21	17.4	19	34.5
80-84	28	23.1	13	23.6
85-89	26	21.5	08	14.5
90-94	16	13.2	02	03.6
95-99	08	06.6	04	07.3
100-104	02	01.7	00	00.0
N	**121**	**100.0**	**55**	**100.0**
Mean	82.1		80.5	
SD	10.6		07.4	

Figure 5.4 A histogram of teachers' view scores of TVE (by gender)



The curriculum of 19 out of the 20 female TVE schools are mainly in the fields of commercial education and home economics. The nature of these TVE courses which are available to girls may have contributed to females' positive views of TVE. Commercial education is a preparation for office jobs which are considered by Sudanese society to be more suitable for girls, as opposed to manual occupations, regardless of income. Home economics is seen to prepare girls to be successful house wives. Commercial education and home economics do not necessarily hinder girls from continuing their higher education and provide opportunities to find jobs in banks, offices and hotels. Higher education staff members and teachers considered these occupations more useful for girls than boys. There is a strong belief among teachers that some TVE subjects are more useful for girls than boys. However, there is significant difference in the strength of agreement between male and female teachers about this issue. This is shown in table 5.14.

Table 5.14 *Provision of courses such as, typing, secretarial, home economics and commercial subjects at the secondary school will be more useful for girls than boys*

	Agree %	Neutral %	disagree %	Mean	SD
Higher education staff	83.4	02.1	14.6	3.9	1.2
Teachers	93.7	01.7	04.6	4.4	0.8
Male	90.9	02.5	06.6	4.3	4.7
Female	100.0	00.0	00.0	0.9	0.5
Academic	94.0	02.0	04.0	3.9	1.0
TVE	93.4	01.4	05.3	4.0	0.9
Below university degree	91.3	04.3	04.3	4.5	1.0
University degree	95.1	00.7	04.2	4.4	0.8
Post-graduate degree	80.0	10.0	10.0	4.2	1.0

This positive female view of TVE was contrary to what had been expected since only a small number of TVE secondary schools are currently available for female students. However, the positive view of TVE held by females is not a sign that they were entering occupations which were considered suitable only for men, because they stated that only some TVE subjects are suitable for them, and currently they can not study the same TVE subjects with boys. Tables 5.15 and 5.16 represent the responses of students and teachers about the suitability of TVE subjects for girls.

Table 5.15 TVE subjects are not suitable for Sudanese girls

Level of agreement	Students		Teachers	
	Male %	Female %	Male %	Female %
Strongly agree	16.6	09.4	10.7	03.7
Agree	18.1	08.1	10.7	14.5
Neutral	14.2	07.4	03.3	01.8
Disagree	28.0	26.3	03.3	43.6
Strongly disagree	23.1	48.8	53.7	36.4
Mean	2.8	2.0	2.4	2.1
SD	1.4	1.3	1.2	1.2

In respect of the suitability of TVE subjects for girls, there was a significance difference between male and female

students and teachers. Females in particular expressed high level of agreement that the TVE curriculum should be differentiated.

Table 5.16 Girls should be provided with different TVE subjects than boys

Level of agreement	Students		Teachers	
	Male %	Female %	Male %	Female %
Strongly agree	33.0	34.0	15.7	10.9
Agree	35.5	30.6	39.7	49.1
Neutral	08.5	05.7	05.0	05.5
Disagree	14.1	12.1	29.8	23.6
Strongly disagree	08.9	17.5	09.9	10.9
Mean	3.7	3.5	2.8	2.8
SD	1.3	1.5	1.3	1.3

However, a considerable majority of both male and female students and teachers agreed that girls should study different TVE subjects than boys. The level of agreement tended to be higher among students than teachers. This is in harmony with Islamic philosophy that women should be prepared to be house wives or to work in occupations separately from men. It is also in harmony with Sudanese traditions and culture that females should work in 'white-collar' occupations which do not involve manual work. This fits well with the highest level of advice of parents against enrolling in TVE courses and low encouragement to study TVE being given to female students. For more details see tables 5.28 and 5.29.

The trend that Sudanese females consider limited types of occupation suitable for them is in agreement with the trend in almost all countries; i.e. that women tend to restrict themselves to a small range of occupations such as teaching,

office work and nursing (Dale, 1985; and Mckinnon and Alhola-Sideway, 1994). This result supports that of the Minnesota State Commission on the economic status of women (1986) which stated that women are dominant in home economics and in office and health education, and that of Silverman and Pritchard (1993) who found that girls were discouraged from taking more technology education in high school owing to stereotypes about suitable occupations. It seems that this trend is likely to continue in the foreseeable future as it is a belief well embedded within Sudanese society, and curriculum planners and policy makers are mindful of it.

However, the traditions and the beliefs of the society has not prevented some female students (29.6%) from deviating from this norm by seeking to study the same TVE subjects as males, and hence aiming to be employed in occupations which have been considered only open to men. Support for this view was shared by some (24.5%) of female teachers. This result suggests that there may be some shifting away from the traditional view of Sudanese people about suitable types of occupations for women. Perhaps the increase in opportunities for enrolment of girls in education has lead them to be more conscious of the change in society. Moreover, they are likely to be aware of the increase in the cost of living, and of the increasing importance of the potential of their economic contributions to their families.

Although higher education staff members and secondary school teachers reported that they felt that only some TVE subjects were suitable for girls, they did not consider that this

necessarily represented an inequality between boys and girls. However, a significant difference was found between academic and TVE teachers in respect to the effect of provision of TVE in secondary schools in bringing inequality between girls and boys (see table 5.17).

Table 5.17 There will be inequality between girls and boys if TVE courses are implemented in secondary schools

	Agree %	Neutral %	disagree %	Mean	SD
Higher education staff	20.9	06.8	72.9	2.4	0.9
Teachers	24.4	13.6	61.9	2.5	1.3
Male	27.3	12.4	60.4	2.5	1.2
Female	18.1	16.4	65.5	2.5	1.2
Academic	27.0	05.0	68.0	2.7	1.2
TVE	52.7	05.3	42.1	2.2	1.0
Below university degree	21.7	08.7	70.1	2.3	1.2
University degree	25.2	14.0	60.9	2.6	1.1
Post-graduate degree	20.0	20.0	60.0	2.4	1.1

The result that no difference was found in views of male and female students in this regard, disagrees with the finding of studies conducted by Akintode (1988) in Lagos state (Nigeria), Mcgillicuddy (1989) in New York State (USA), and Rossetti, et al. (1990) in Ohio (USA).

5.3.2. Students' views of TVE (by socio-economic status)

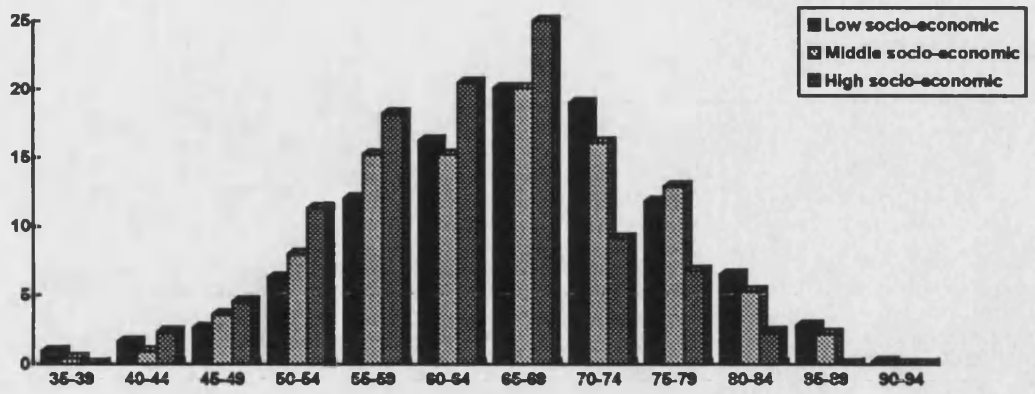
This research indicates that although the higher a student's socio-economic status is, the lower their view scores of TVE tend to be, no overall significant difference was found between students according to their socio-economic status. According, the null hypothesis No. 1.2 (there is not a significant relationship between secondary school students' views of TVE, and their families' socio-economic status) is accepted. This is shown in table 5.18 and Figure 5.5. The

results of this study show that TVE course groups currently are mainly made up of students whose parents have lower status educational and occupational levels (see table 5.1). A significant difference was found in the view scores towards TVE of students with low and high socio-economic status. The majority of those from high socio-economic status families were students following academic courses (see table 5.1).

Table 5.18 Frequency distribution of students' view scores of TVE (by socio-economic status)

View scores	Low socio-economic status		Middle socio-economic status		High socio-economic status	
	f	%	f	%	f	%
35-39	04	00.9	01	00.4	00	00.0
40-44	07	01.6	02	00.9	01	02.3
45-49	11	02.6	08	03.6	02	04.5
50-54	27	06.3	18	08.0	05	11.3
55-59	52	12.0	34	15.2	08	18.2
60-64	70	16.2	34	15.2	09	20.5
65-69	87	20.1	45	20.1	11	25.0
70-74	82	19.0	36	16.1	04	09.1
75-79	51	11.8	29	12.9	03	06.8
80-84	28	06.5	12	05.3	01	02.3
85-89	12	02.8	05	02.2	00	00.0
90-94	01	00.2	00	00.0	00	00.0
N	**432**		**224**		**44**	
Mean	66.7		65.6		62.5	
SD	09.9		09.4		08.6	

Figure 5.5 A histogram of students' view scores of TVE (by socio-economic status)



Their high occupational aspirations to be doctors, engineers, and the like and their need for university qualifications, is likely to have affected their view scores of TVE. Parents with high socio-economic status tend to have strong aspirations that their children should go onto and attend higher education. As they feel that studying TVE courses would hinder their children from going on to higher education, a considerable portion (54.5%) are reported as advising their children not to follow such courses. This is a likely explanation of why parents who themselves have higher education qualifications and/or high status occupations are more likely to discourage their children from studying TVE courses.

There was an overall significant difference between students having different occupational aspirations and their view scores of TVE. Thus the null hypothesis No. 1.3 (there is not a significant relationship between secondary school students' views of TVE, and their vocational aspirations) is rejected. Students who elected to be skilled workers had the highest mean scores. The lowest mean score was found for those who

selected a high status occupations such as doctors and engineers. These results are shown in table 5.19.

Table 5.19 Descriptive statistics of students' view scores of TVE (by occupational aspiration)

Occupational aspiration	Mean score	SD	N
Undecided	66.5	09.6	206
Skilled workers	70.4	08.6	044
Office clerks and teachers	68.7	10.4	090
Lawyers, police officers and army	65.7	09.6	134
Doctors and engineers	64.1	09.3	226

This result showed that the higher a student's aspiration, the lower their view scores of TVE tended to be. Students who elected to be skilled workers were aware that TVE courses were important for them but those who had a higher aspiration scored below the average. They were aware that studying TVE courses would hinder them from achieving their aspirations. This is probably why about 41.0% of students reported that studying TVE courses would limit their opportunity to attend higher education. This result showed that there was a relationship between students' occupational aspirations and their view scores of TVE. This supports the notion that the reluctance of students to follow TVE curriculum is possibly because it hinders them from achieving their aspirations to attend higher education. For more details see opportunity to attend higher education in page 183.

A father's education level was the main factor affecting students' views of TVE. Fathers' and mothers' occupations, as well as mothers' education level on the other hand did not seem to have an impact on students' view of TVE. In the sample, 25.0% of students' fathers and 6.0% of their mothers

are university graduates or post-graduates. 37.2% of fathers and 66.4% of mothers are without formal education, or only have primary education. The fact that most mothers are uneducated is likely to have a strong bearing on their having little effect on their children's views of TVE. In contrast, the number of uneducated fathers is low and hence there is a greater effect on their children's' views of TVE.

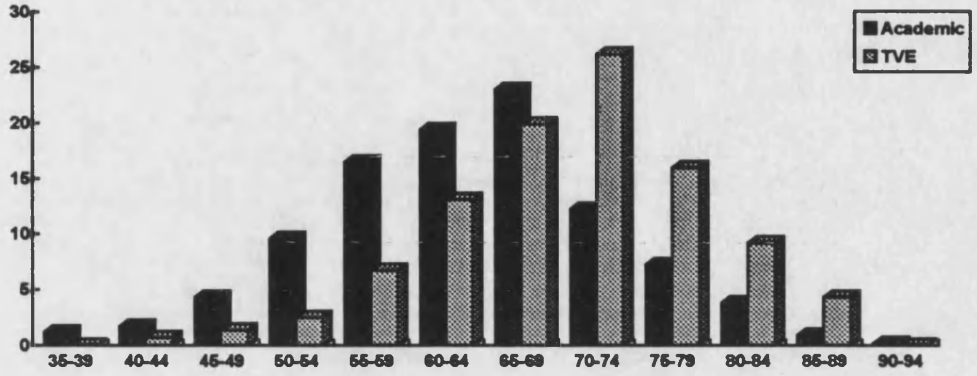
5.3.3. Students' views of TVE (by type of curriculum)

It was to be expected that students following a TVE curriculum would have more positive view of TVE than those following an academic curriculum. The null hypothesis No. 1.4 (there is not a significant relationship between secondary school students' views of TVE, and the type of curriculum they follow) is rejected. This is confirmed in table 5.20 and in figure 5.6.

Table 5.20 Frequency distributions of students' view scores of TVE (by type of curriculum)

scores	Academic students		TVE students	
	f	%	f	%
30-34	00	00.0	00	00.0
35-39	05	01.2	00	00.0
40-44	07	01.7	02	00.7
45-49	18	04.3	04	01.4
50-54	40	09.6	07	02.5
55-59	69	16.5	19	06.7
60-64	81	19.4	37	13.1
65-69	96	23.0	56	19.9
70-74	51	12.2	74	26.2
75-79	30	07.2	45	16.0
80-84	16	03.8	26	09.2
85-89	04	00.9	12	04.3
90-94	01	00.2	00	00.0
N	**418**		**282**	
Mean	63.4		70.0	
SD	9.5		8.6	

Figure 5.6 Histogram of students' view scores of TVE (by type of curriculum)



Although there was not an overall significant difference between male and female students' view of TVE, it was to be expected that students following a TVE curriculum irrespective of gender, would tend to have more positive view scores than students following an academic curriculum. This is confirmed in table 5.21 and figure 5.7 and 5.8.

Table 5.21 Frequency distribution of male and female students' view scores of TVE (by type of curriculum)

scores	Male				Female			
	Academic		TVE		Academic		TVE	
	f	%	f	%	f	%	f	%
35-39	03	01.4	00	00.0	02	01.0	00	00.0
40-44	03	01.4	01	00.5	04	02.0	01	01.1
45-49	07	03.3	03	01.6	10	04.9	01	01.1
50-54	23	10.7	04	02.1	15	07.4	03	03.2
55-59	41	19.1	11	05.8	32	15.7	07	07.5
60-64	47	22.0	27	14.3	36	17.6	10	10.8
65-69	46	21.5	40	21.2	47	23.0	17	18.3
70-74	22	10.3	53	28.0	29	14.2	21	22.6
75-79	13	06.1	23	12.2	17	08.3	22	23.6
80-84	07	03.3	19	10.1	09	04.4	07	07.5
85-89	02	00.9	08	04.2	02	01.0	04	04.3
90-94	00	00.0	00	00.0	01	00.5	00	00.0
N	**214**		**189**		**204**		**93**	
Mean	62.8		69.3		64.2		70.2	
SD	09.3		08.6		09.9		08.1	

Figure 5.7 A histogram of male students' view scores of TVE (by type of curriculum)

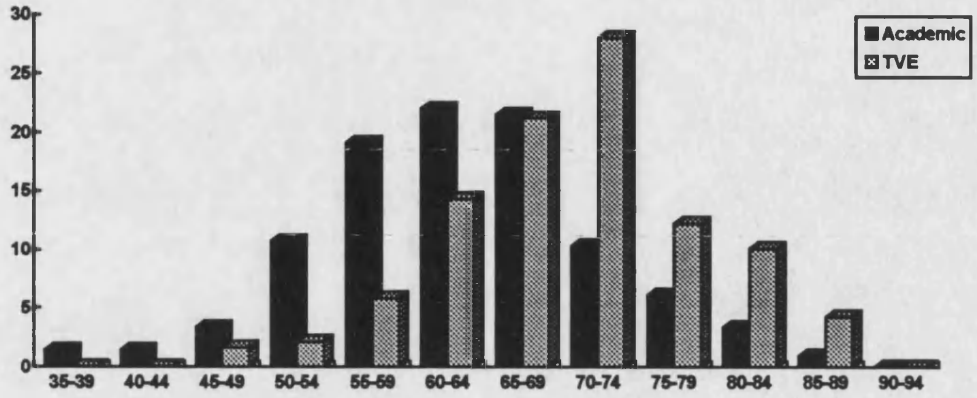
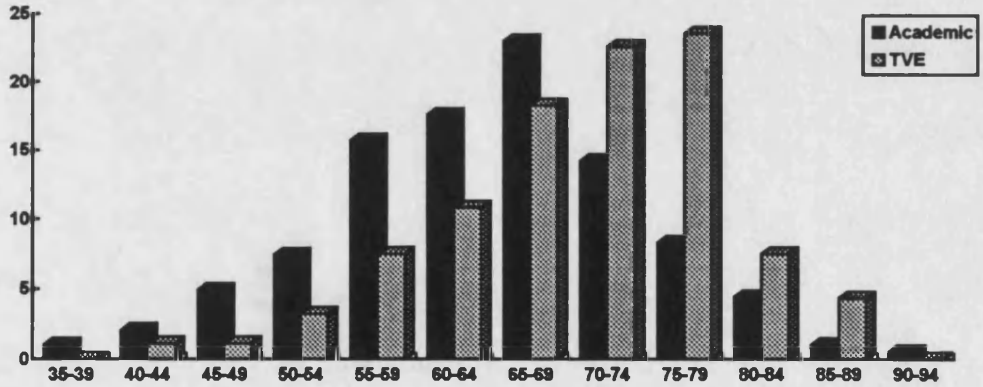


Figure 5.8 A histogram of female students' view scores of TVE (by type of curriculum)



The high positive views of TVE held by students following TVE courses is undoubtedly affected by a range of factors. It is likely that the high level of stress placed on the importance of TVE expressed by 80.5% of parents and their encouragement 66.7% of their children to study TVE (see tables 5.27 and 5.28) has contributed to this. An additional factor is that students following TVE courses had access to more information about TVE and the opportunities provided by studying TVE

courses (see tables 5.30 and 5.31). This result supports Slamet (1990) who stated that after students are exposed to vocational education they are likely to have either much more positive or negative attitudes towards vocational education compared to 'unexposed' academic students.

The finding that students' exposure to TVE has an impact on their attitudes towards TVE and work suggests that preferably all students should have some exposure to TVE (see table 5.22). The government policy of providing TVE and academic courses in the same school could make a positive contribution here.

Table 5.22 Introducing TVE subjects into secondary schools may change positively how students think about work and jobs

	Agree %	Neutral %	disagree %	Mean	SD
Higher education staff	85.5	00.0	14.6	4.1	1.3
Teachers	81.9	06.8	11.3	4.0	1.1
Male	81.0	06.6	12.4	4.0	1.1
Female	83.7	07.3	09.1	4.1	1.0
Academic	82.0	07.0	11.0	4.0	1.0
TVE	81.6	06.6	11.9	4.0	1.0
Below university degree	60.9	04.3	34.7	3.4	1.4
University degree	84.7	07.0	08.4	4.1	1.0
Post-graduate degree	90.0	10.0	00.0	4.4	0.7

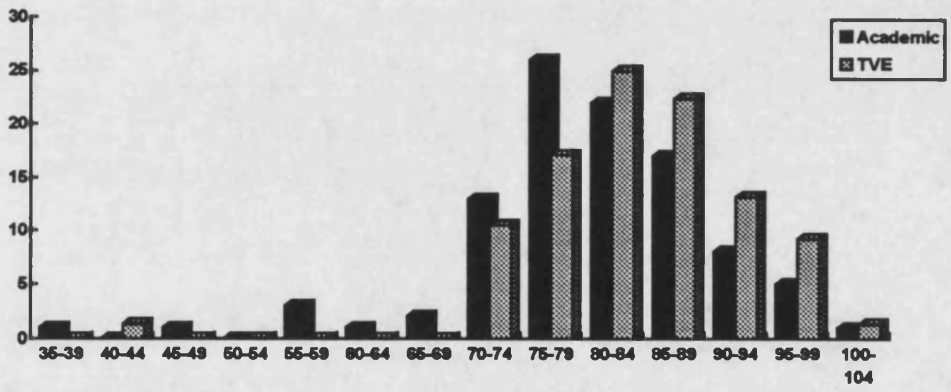
However, providing TVE courses in a school alongside academic ones may not ensure either positive messages or that students will choose 'appropriately'. Again, this is a complex issue and there are probably no simple solutions.

Table 5.23 Frequency distributions of teachers' view scores of TVE (by specialisation)

View scores	Academic		TVE	
	f	%	f	%

35-39	01	01.0	00	00.0
40-44	00	00.0	01	01.3
45-49	01	01.0	00	00.0
50-54	00	00.0	00	00.0
55-59	03	03.0	00	00.0
60-64	01	01.0	00	00.0
65-69	02	02.0	00	00.0
70-74	13	13.0	08	10.5
75-79	26	26.0	13	17.1
80-84	22	22.0	19	25.0
85-89	17	17.0	17	22.4
90-94	08	08.0	10	13.2
95-99	05	05.0	07	09.2
100-104	01	01.0	01	01.3
N	**100**		**76**	
Mean	80.0		83.7	
SD	10.2		8.9	

Figure 5.9 Teachers' view scores of TVE (by specialisation)



A significant difference in the degree of positiveness was found between academic and TVE teachers' views of TVE, with both sets of teachers showing high positive scores of TVE. This is shown in table 5.23 and in figure 5.9.

5.34. Teachers' and students' view scores of TVE (by age)

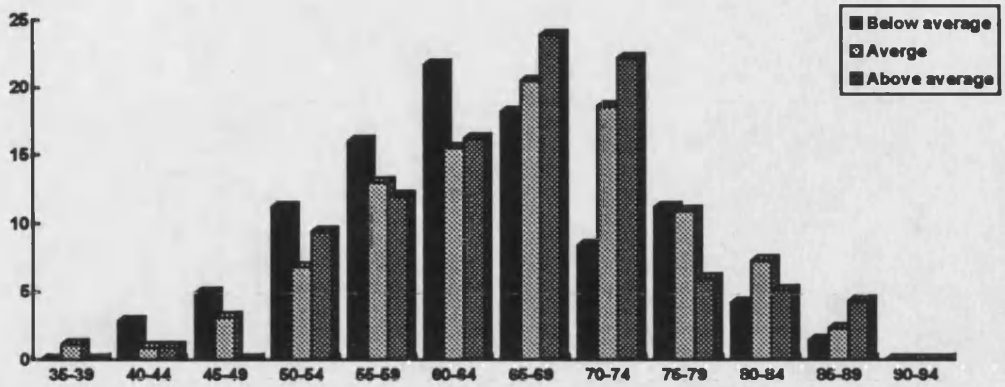
Students' view scores of TVE tend to be more positive as age increases. Therefore, the null hypothesis No. 1.5 (there is

not a significant relationship between secondary school students' views of TVE, and their age) is rejected. Table 5.24 figure 5.10 represent the view scores of TVE by students from different age groups. Students aged 19 or older were present in greater proportion among students studying TVE courses 70.1% of the 'above 19' group were TVE students and they had a more positive view of TVE than academic students. The question which needs to be addressed here is why those students aged 19 or over were concentrated in TVE courses? It could be that TVE students stay for a longer period of time at secondary school to complete their studies because many of them were from low academic ability groups.

Table 5.24 Frequency distribution of students' view scores of TVE (by age)

View scores	Below average		Average		Above average	
	f	%	f	%	f	%
35-39	00	00.0	05	01.1	00	00.0
40-44	04	02.8	04	00.9	01	00.9
45-49	07	04.9	14	03.1	00	00.0
50-54	16	11.2	30	06.8	11	09.4
55-59	23	16.0	57	13.0	14	12.0
60-64	31	21.7	68	15.5	19	16.2
65-69	26	18.2	90	20.5	28	23.9
70-74	12	08.4	82	18.6	26	22.2
75-79	16	11.2	48	10.9	07	06.0
80-84	06	04.2	32	07.3	06	05.1
85-89	02	01.4	10	02.3	05	04.3
90-94	00	00.0	00	00.0	00	00.0
N	**143**		**440**		**117**	
Mean	63.0		66.4		68.5	
SD	09.5		09.9		08.1	

Figure 5.10 *A histogram of students' view scores of TVE (by age)*



Scores

The practice of selection of higher ability students to academic schools with others then going to TVE schools has been responsible for the concentration of this 'type' of students in TVE schools. Now, with both academic and TVE students in the same school, the issue still remains: i.e., how will students be assigned to different types of courses to prevent this segregation from taking place?

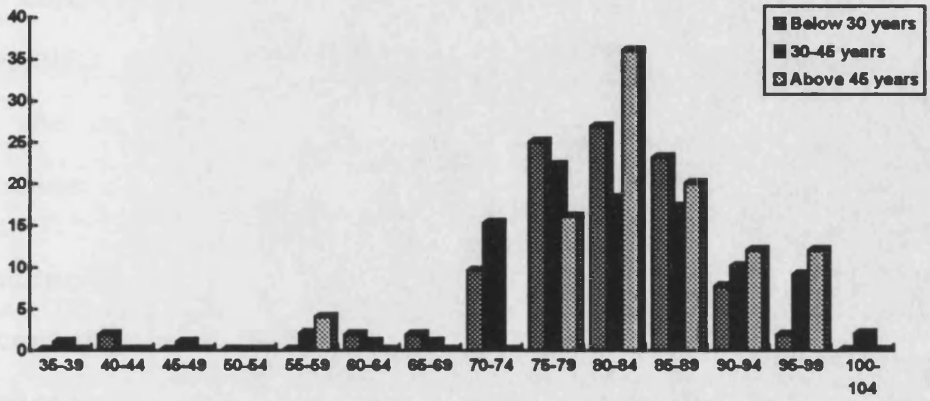
Teachers' view scores tend to increase as their age increase. However, no significance difference was found between teachers' view scores according to their ages. Teachers from the above 45 years group had the highest view scores of TVE. This is shown in table 5.25 and figure 5.11.

Table 5.25 Frequency distribution of teachers' view scores of TVE (by age)

View scores	Below 30 years		30-45 years		Above 45 years	
	f	%	f	%	f	%
35-39	00	00.0	01	01.0	00	00.0
40-44	01	01.9	00	00.0	00	00.0
45-49	00	00.0	01	01.0	00	00.0
50-54	00	00.0	00	00.0	00	00.0
55-59	00	00.0	02	02.0	01	04.0
60-64	01	01.9	01	01.0	00	00.0
65-69	01	01.9	01	01.0	00	00.0
70-74	05	09.6	15	15.2	00	00.0

75-79	13	25.9	22	22.2	04	16.0
80-84	14	26.9	18	18.2	09	36.0
85-89	12	23.1	17	17.2	05	20.0
90-94	04	07.7	10	10.1	03	12.0
95-99	01	01.9	09	09.1	03	12.0
100-104	00	00.0	02	02.0	00	00.0
N	**52**		**99**		**25**	
Mean	80.5		81.5		84.4	
SD	08.5		10.5		08.5	

Figure 5.11 A histogram of teachers' view scores of TVE (by age)



5.4. The influence of parents and teachers

This study indicates that parents and teachers have important roles in guiding the orientation of students to different types of secondary school curriculum, and hence to a career. Students' responses about the most influential person in their selection of their secondary school are shown in table 5.26.

Table 5.26 The influence of individuals in students' selection of their secondary school

Order of influence	Father		Mother		Teacher		Relatives		Friends	
	No.	%	No.	%	No.	%	No.	%	No.	%
1st.	286	40.9	67	09.5	99	14.1	40	05.7	27	03.9
2nd	112	16.0	164	23.4	58	08.3	55	07.9	60	08.6
3rd	17	02.4	69	09.9	74	10.6	54	07.7	60	08.6
4th	09	01.3	23	03.3	32	04.6	65	09.3	67	09.5
5th	06	00.9	14	02.0	17	02.4	57	08.1	57	08.1
Total	430	61.5	337	48.1	280	40.0	271	38.7	271	38.7

This finding agreed with Lam's second category of the classification system of barriers that influenced students not to enrol in further education. The second category of this classification system is the immediate external reasons in which influence of others (parents, counsellors, school personnel, friends, neighbours teachers and other relatives) is one component of this system (Lam, 1982 in: Rossetti, et al., 1990). This result is also in agreement with Frost (1993) who considered the influence of family as a factor in the process of career choice.

A considerable portion of students irrespective of their characteristics reported that their parents believed that TVE was important.

Table 5.27 My parents have stressed the importance of TVE courses

	Agree %	Neutral %	disagree %	Mean	SD
All the sample	62.7	18.0	19.3	3.7	1.6
Male	65.0	17.6	17.4	3.7	1.2
Female	59.7	18.5	21.8	3.5	1.3
Academic	50.7	24.2	25.1	3.3	1.3
TVE	80.5	08.9	10.6	4.1	1.1
Low socio-economic	66.2	17.1	16.7	3.8	1.3
Middle socio-economic	57.6	19.2	23.2	3.5	1.3
High socio-economic	54.5	20.5	25.0	3.4	1.3

The highest level of parental stress of the importance of TVE was reported by students with low socio-economic status following TVE courses. Students with low socio-economic status were mostly those following a TVE curriculum whose parents put greater importance on TVE. In contrast the lowest level of parental stress of the importance of TVE was

reported by students following academic curriculum and by those with high socio-economic status. Students with high socio-economic status were mostly following academic courses. This is why a significance difference was found between academic and TVE students' view scores of TVE, and between students with low and high socio-economic status. These results are shown in table 5.27.

Again, students following a TVE curriculum had the greatest encouragement of their parents to study TVE courses. In contrast, students following an academic curriculum and female students were leastly encouraged by their parents to study TVE courses; followed by those with middle and high socio-economic status. They were mostly advised by their parents not to study TVE courses. This is shown in tables 5.28 and 5.29. For cultural and traditional reasons (see page 165), only about 29.0% of parents of female students encouraged them to study TVE courses. Moreover, the research shown that 59.2% of parents advised their daughters against studying TVE courses. The lower the socio-economic status of a student's family, the greater their parents' encouragement and the lower their advise against following TVE courses.

Table 5.28 My parents encouraged me to study TVE courses

	Agree %	Neutral %	disagree %	Mean	SD
All the sample	38.4	16.0	45.6	2.9	2.1
Male	45.4	11.2	43.4	3.1	1.5
Female	29.0	22.6	48.4	2.7	1.4
Academic	19.4	19.4	61.2	2.4	1.2
TVE	66.7	11.0	22.3	3.7	1.4
Low socio-economic	42.2	15.2	42.4	3.0	1.5
Middle socio-economic	32.1	17.9	50.0	2.7	1.4
High socio-economic	31.8	13.6	54.6	2.6	1.5

Table 5.29 My parents advised me against enrolling in TVE courses

	Agree %	Neutral %	disagree %	Mean	SD
All the sample	52.5	16.2	31.3	3.3	2.0
Male	47.6	14.1	38.3	4.0	1.2
Female	59.2	18.9	21.9	3.6	1.3
Academic	57.9	18.7	23.4	3.5	1.3
TVE	44.7	12.4	42.9	3.1	1.5
Low socio-economic	51.4	15.1	33.5	3.3	1.4
Middle socio-economic	54.5	18.3	27.2	3.5	1.4
High socio-economic	54.5	15.9	29.6	3.3	1.5

A considerable number of parents believe that TVE was important but, at the same time, they did not encourage their children to study TVE courses. Moreover, they advised them against enrolling in TVE courses (see tables 5.25, 5.26 and 5.27). This is possibly another explanation of the reluctance of students to study TVE courses even though they themselves had positive views of TVE. It is, of course, important to recall that attitude and disposition towards a particular set of actions is only one of many factors which will determine whether any action actually takes place (see chapter 3, section 3.6.3). Accordingly, it is important to recognise the limitations which can be placed on research findings such as these. This seems to reinforce the points made (see chapter 4) about treating research outcomes with due caution.

Teachers were considered in the second place after parents in their influence on students' selection of TVE courses. The positive views of TVE held by teachers may be an indication that they may have a role in convincing students to study TVE courses in the school. To what extent they are willing to play that role and how to do that are not known yet.

5.5. Information about TVE

A majority of students believed that there was a lack of information about TVE (see table 5.30). However, they disagreed that they do not know any thing about TVE. A smaller portion of female students than any other group reported that there was a lack of information about TVE. It seems likely that female students were considering only the TVE courses available for them in their responses to most of the issues raised in this study. These courses are limited in scope and the opportunities available for those studying these courses for employment or for attending higher education are well known. The majority of students with high socio-economic status reported their feelings that there was a lack of information about TVE. Students from this group were mainly following an academic curriculum and thus they had less exposure to the information about TVE, or perhaps had not been particularly interested in finding out such information.

Table 5.30 There is a lack of information about TVE

	Agree %	Neutral %	disagree %	Mean	SD
All the sample	62.2	12.7	25.1	3.6	1.9
Male	65.7	11.7	22.6	3.7	1.3
Female	57.3	14.1	28.6	3.4	1.4
Academic	63.1	17.0	19.9	3.2	1.4
TVE	60.6	06.4	33.0	2.9	1.5
Low socio-economic	60.4	13.4	26.2	3.5	1.4
Middle socio-economic	63.9	12.5	23.6	3.6	1.4
High socio-economic	70.5	06.8	22.7	3.8	1.4

A majority of students, irrespective of their characteristics, reported their disagreement that they did not know any thing about TVE (see table 5.31). These results,

taken together show that whilst students do have some awareness of TVE issues the information available for students about TVE courses was not enough.

Table 5.31 I do not know any thing about TVE

	Agree %	Neutral %	disagree %	Mean	SD
All the sample	24.9	06.4	68.7	2.3	1.9
Male	21.3	07.7	71.0	2.3	1.3
Female	29.6	04.7	65.7	2.4	1.4
Academic	32.8	06.9	60.3	3.2	1.4
TVE	13.1	05.7	81.2	2.9	1.5
Low socio-economic	24.8	06.9	68.3	2.3	1.3
Middle socio-economic	23.7	04.5	71.8	2.3	1.8
High socio-economic	31.8	11.4	56.8	2.7	1.3

The lack of information about TVE possibly affected their decision not to choose TVE courses at secondary school level. Forst (1992) considered the availability of sufficient information on career options upon which to make a decision a factor for career choice. Students have limited information about TVE which resulted in a considerable number of them in their final year in secondary school being unable to decide the type of career to follow in the future (see table 5.19). This result was expected as no counselling and guidance and career awareness were available in schools.

5.6. Opportunity to attend higher education

A majority of teachers (more than 65.5%) reported their agreement that students following TVE courses should be prepared for higher education. For more details see table 5.32.

Table 5.32 Students following TVE courses in school should not be repared for higher education

	Agree %	Neutral %	disagree %	Mean	SD
Higher education staff	12.5	10.4	77.1	1.8	0.3
Teachers	22.2	06.3	71.6	1.8	1.4
Male	07.4	5.0	87.6	1.6	1.0
Female	29.1	5.5	65.5	2.4	1.4
Academic	18.0	8.0	74.0	2.0	1.3
TVE	09.2	1.3	89.5	1.6	1.0
Below university degree	04.3	04.3	91.3	1.4	0.8
University degree	16.1	04.9	79.0	1.9	1.3
Post-graduate degree	10.0	10.0	80.0	1.6	1.1

This result suggests that all students feel that they should have equal opportunities to continue their education to the highest possible level. It agrees with the recommendation of the general conference of UNESCO in 1974 which recommended a system of education in which academic and TVE courses should both be an integral part in such a way that no barriers should exist between different levels and areas of education, between education and employment, and between schools and society.

According to UNESCO, this system should be designed so that TVE is an integral part of a basic general education for every individual and should allow access to all aspects and areas of education at all levels. In this system, more students from low socio-economic status families are likely to have more opportunities to attend higher education and hence may result in changing their socio-economic status. Thus may bring more equality of opportunity between students from different socio-economic status. There was a division among students about the effect of studying TVE courses on their opportunity to attend higher education (see table 5.33).

Table 5.33 TVE limits my opportunity to attend higher education

	Agree %	Neutral %	disagree %	Mean	SD
All the sample	41.7	12.7	45.6	2.9	2.1
Male	44.7	13.6	41.7	3.1	2.0
Female	37.7	11.4	50.8	2.8	2.5
Academic	35.4	15.8	48.8	3.2	1.4
TVE	51.1	08.2	40.7	2.9	1.5
Low socio-economic	41.9	11.1	47.1	2.9	1.5
Middle socio-economic	53.5	13.8	32.6	3.3	1.4
High socio-economic	43.2	22.7	34.1	3.1	1.4

The practice of selecting academically less able students for TVE schools and considering only academic subjects for entry to higher education made students studying in TVE schools unable to compete with those studying in academic schools for the limited places in higher education. As only academic subjects were considered as a requirement for entry to higher education, little opportunity was left for students studying TVE courses to go on to higher education.

Moreover, students' efforts were divided between concentrating on subjects required for higher education, or on TVE courses needed in the labour market. This result supports the finding by Rossetti, et al. (1990) who found that 25.0% of a cohort did not enrol in vocational education programmes simply because they wanted to go on to higher education. In contrast, higher education staff members and secondary school teachers in this survey had opposite views. A majority of them disagreed that studying TVE has an effect on students' abilities to attend higher education. This is shown in table 5.34.

This result supports Al-Aaqib (1974) who stated that the belief held by authorities of different universities that students following an academic curriculum at secondary school level are more appropriate for higher education than those following TVE curriculum is a false one. He considered that the curricula in the universities had been designed to suit students following an academic curriculum.

Table 5.34 If TVE subjects are provided in the secondary school curriculum they will impair student's ability to go to higher education

Level of agreement	Secondary school teachers		Higher education staff members	
	f	%	f	%
Strongly agree	16	09.1	01	02.1
Agree	23	13.1	05	10.4
Neutral	11	06.3	05	10.4
Disagree	82	46.6	29	60.4
Strongly disagree	44	25.0	08	16.7
N	**176**		**48**	
Mean	2.3		2.2	
SD	1.1		0.9	

A possible explanation for these differences is that higher education staff members and teachers had some information about the gradual change taking place in respect of a consideration of some TVE subjects for entry to higher education. A considerable majority of higher education staff members and secondary school teachers expected that considering TVE qualifications for entry to higher education may convince more students to take TVE subjects in secondary schools (see table 5.35).

This result is likely to explain why students had positive views of TVE but they were reluctant to study TVE courses.

Table 5.35 If TVE subjects qualifications could be used for entry to higher education, more students will take TVE subjects in secondary school

	Agree %	Neutral %	disagree %	Mean	SD
Higher education staff	83.3	06.3	10.4	4.1	1.1
Teachers	83.6	04.0	12.5	4.1	1.0
Male	86.7	00.8	12.4	4.2	1.1
Female	76.3	10.9	12.7	3.9	1.0
Academic	76.0	07.0	17.0	3.9	1.1
TVE	93.4	1.3	05.2	4.3	1.9
Below university degree	95.7	00.0	04.3	4.4	0.9
University degree	82.6	04.9	12.6	4.0	1.1
Post-graduate degree	70.0	00.0	30.0	3.8	1.3

This result supports the conclusion made by Al-Aaqib (1974) that if TVE courses were to be considered as the main prerequisite for admission to higher education, the perceptions of students and parents about the traditional education system would be changed in favour of TVE. This also supports Marklund (1988) who found that the vocational lines in Sweden's upper secondary schools have become more attractive than before because of changes in entrance requirements for universities, and Wilson (1993) who claimed that changing focus of the senior secondary technical school curriculum to the preparation for post secondary studies and/or the world of work appears to have an effect on students' perceptions towards TVE. The problem remains of how to have a balanced curriculum with both academic and TVE subjects whilst keeping the door open for progression onwards. The board for selecting secondary school leavers for higher education has recently decided to consider two TVE subjects as an entry qualification to some universities.

However, how to convince some universities and higher education institutions to accept TVE subjects for entry to higher education is still a problem. As stated by the official from the Ministry of Education, some universities are still insisting that they will not accept TVE subjects as entry qualification for higher education. It is important to recognise that a variety of 'push' and 'pull' factors might operate here. For example, if opportunities are created for students to follow TVE courses in schools and higher education, then the research suggest that students will take up those places, i.e. changing the system will 'pull' students into TVE work. But, it might also operate in the other direction in that, if a sufficient number of students and graduates develop TVE-related skills, then opportunities will be created to take advantage of these skills, i.e. business might adapt and change in order to use the skills which are growing within the working population. In other words, students might 'push' the system into changing. Whether this will happen will, to a large extent, depend on how flexibly employers can respond to changes within the education system.

Table 5.36 TVE subjects should be seen as having equal value as academic subjects for entry to higher education (by higher education staff members and teachers)

	Agree %	Neutral %	disagree %	Mean	SD
Higher education staff	81.3	06.3	12.5	4.0	0.5
Teachers	87.5	02.8	09.7	4.2	0.9
Male	86.0	03.3	10.7	4.2	1.0
Female	90.9	01.8	07.3	4.2	0.8
Academic	84.0	03.0	13.0	4.0	1.0
TVE	92.1	02.6	05.2	4.4	0.9

Below university degree	78.3	04.3	17.3	4.0	1.3
University degree	90.3	02.1	07.7	4.3	0.9
Post-graduate degree	70.0	10.0	20.0	3.8	1.4

In contrast to this, a high portion of higher education staff members, secondary school teachers and students reported that TVE and academic subjects should have equal value for the purpose of selecting secondary school leavers to higher education. This is shown in tables 5.36 and 5.37.

Table 5.37 TVE subjects should be seen as having equal value as academic subjects for entry to higher education (by students)

	Agree %	Neutral %	disagree %	Mean	SD
All students' sample	79.7	5.9	14.4	4.1	1.9
Male	76.1	5.5	18.4	4.0	1.3
Female	84.5	6.4	09.1	4.3	1.0
Academic	77.1	8.4	14.5	4.0	1.2
TVE	83.8	2.1	14.1	4.3	1.2
Low socio-economic	78.3	6.0	15.7	4.1	1.3
Middle socio-economic	81.3	5.8	12.9	4.1	1.1
High socio-economic	86.4	4.5	09.1	4.3	1.1

5.7. Structure and organisation of TVE

The positive views of higher education staff members, secondary school teachers and students, and their agreement that TVE should be provided in the same school with academic subjects, indicates that they support the comprehensive secondary school system of education (see tables 5.38 and 5.39).

Table 5.38 TVE subjects should be offered in the same schools as academic subjects (by higher education staff and teachers)

	Agree %	Neutral %	disagree %	Mean	SD
Higher education staff	58.3	12.5	29.2	3.4	0.7
Teachers	78.4	02.8	18.7	3.8	1.3
Male	77.7	02.5	19.8	3.8	1.2
Female	80.0	03.6	16.4	3.9	1.0
Academic	71.0	02.0	27.0	3.6	1.2
TVE	88.1	03.9	07.9	4.1	0.9
Below university degree	82.6	04.3	13.0	4.0	1.2
University degree	79.0	02.1	18.9	3.8	1.1
Post-graduate degree	60.0	10.0	30.0	3.4	1.4

Table 5.39 TVE subjects should be offered in the same schools as academic subjects (by students)

	Agree %	Neutral %	disagree %	Mean	SD
All the sample	63.4	09.0	27.6	3.6	1.2
Male	60.8	17.4	21.8	3.6	1.4
Female	53.1	18.2	28.7	3.6	1.4
Academic	61.7	09.3	29.0	3.4	1.4
TVE	66.0	08.5	25.5	3.7	1.4
Low socio-economic	64.2	08.1	27.7	3.6	1.4
Middle socio-economic	29.5	10.7	59.8	3.5	1.4
High socio-economic	15.9	09.1	75.0	2.8	1.0

A higher proportion of teachers than higher education staff members and students reported their agreement about the provision of TVE in the same school with academic subjects.

Table 5.40 When and where TVE courses should be provided

	Higher education staff			Teachers		
	Agree %	Neutral %	Disagree %	Agree %	Neutral %	Disagree %
Special centres	35.5	8.5	56.3	25.6	6.3	68.1
After secondary school	50.0	4.2	45.9	39.2	4.0	56.8
From the first year in school	87.6	6.3	06.4	83.5	5.7	10.8
From the second year in school	29.2	4.2	66.7	29.2	4.2	66.7

The result of this study show clearly that there is a desperate need for a reform of the educational system because of its inability to cope with the needs of the community, and its role in the high rate of unemployment (see tables 5.5, 5.6 and 5.7). This study shows an agreement between all respondents about a need for changing the educational system. However, there was not full agreement about the way in which implementation might occur.

Informal discussions with teachers showed that some TVE teachers were unhappy with the new system. They believed that change would not enhance the development of TVE, but would destroy the previously established TVE system. They thought that available resources should be spent on improving the quality of the existing TVE secondary schools rather than expanding TVE in all secondary schools without giving attention to quality. Two officials from the Ministry of Education were against the introduction of TVE courses alongside with academic courses (see section 5.7.2).

There was a debate within the Sudan about whether the provision of TVE in the same school will enhance the development of TVE, or whether it will be an obstacle for its development. The previously existing problem of the reluctance of students to follow TVE courses is expected to continue unless students and parents were convinced to accept TVE courses. It is not a matter of where TVE courses were provided, but how students choose these courses. Moreover, the comparison of the implementation of the new system of education with other similar developing countries which have

the experience of diversification of secondary education reveals that the lessons from the experience of those countries had not fully been considered.

The change was implemented quickly in the Sudan, whereas it has been argued (e.g. by Middleton, 1988) that this is best achieved over a long period of time in a gradual fashion. Most of the other measures mentioned by Middleton (1988) have resulted in productive TVE systems in some developing countries were not considered in the Sudan's developments. The following sections (5.7.1/2/3) discuss some of the issues, drawn from the experience of some developing countries which need to be considered before any change takes place.

5.7.1. Content of TVE Curriculum

Higher education staff members and secondary school teachers agreed that theoretical and practical aspects of any subject should be integrated in a way that both aspects should be emphasised (see table 5.41).

Table 5.41 Theoretical and practical aspects of any subject should complement each other

	Agree %	Neutral %	disagree %	Mean	SD
Higher education staff	93.8	00.0	6.3	4.3	0.9
Teachers	93.7	01.1	5.1	4.4	0.6
Male	94.2	02.5	3.3	4.5	0.8
Female	92.7	01.8	5.5	4.2	0.7
Academic	93.0	02.0	05.0	4.4	0.8
TVE	94.7	00.0	05.2	4.4	0.8
Below university degree	95.7	00.0	04.3	4.4	0.9
University degree	93.8	01.4	04.9	4.4	0.8
Post-graduate degree	90.0	00.0	10.0	4.5	1.0

Integration of both academic and TVE courses fulfil the recommendations of UNESCO, i.e., that a new system of life-long education, in which TVE and academic subjects are both an integral part of a unified system of education, with reduced barriers between academic and TVE courses.

This result was consistent with the finding of Poole and Zahun (1986) who concluded that neither academic nor vocational education alone could provide the skills needed for jobs in the future, and of Pautler (1986) who indicated that a solid foundation of general skills and knowledge are needed by vocational education students. However, academic subjects are still seen by many teachers as important subjects in secondary school curriculum, more so than TVE subjects as they ranked technology and home economics as numbers seven and nine respectively after academic subjects. Higher education staff members considered technology as number four after academic subjects. This is shown in table 5.42.

Table 5.42 Subjects which all students should study in secondary school

	School teachers			HE staff members		
Subjects	**N**	**%**	**Order**	**N**	**%**	**Order**
Arabic language	171	97.2	01	45	93.8	01
Mathematics	166	94.3	02	45	93.8	01
Religion	161	91.5	03	42	87.5	03
English language	151	85.8	04	44	91.7	02
General science	128	72.7	05	36	75.0	05
Civic education	100	56.8	06	31	64.6	06

Technology	98	55.7	07	38	79.2	04
Geography	64	36.4	08	18	37.5	08
Environment	64	36.4	08	31	64.6	06
Home economics	62	35.2	09	22	45.8	07
Computer	59	33.5	10	12	25.0	11
Physical education	54	30.7	11	12	25.0	11
Electricity	49	27.8	12	14	29.2	10
History	49	27.8	12	17	35.4	09
Technical drawing	48	27.3	13	06	12.5	15
Simple agriculture	46	26.1	14	11	22.9	12
Mechanical	38	21.6	15	09	18.8	13
Art education	37	21.0	16	07	14.6	14
Typing	24	13.6	17	07	14.6	14
Gardening	24	13.6	17	03	06.3	16

A majority (more than 81.8%) of both higher education staff members and secondary school teachers agreed that some knowledge about work should be provided in early stages before students come to secondary schools. Moreover, they reported that all secondary schools should provide basic skills such as shown in tables 5.43 and 5.44.

Table 5.43 Types of skills which secondary schools should provide

	Higher education staff			Teachers		
	Agree %	Neutral %	Disagree %	Agree %	Neutral %	Disagree %
Basic skills in all secondary schools	93.8	00.0	6.3	81.8	09.1	09.1
Transferable skills	62.5	08.3	29.2	77.2	08.3	14.8
Adaptable to the labour market needs	83.0	05.1	11.9	83.3	04.2	12.5

Table 5.44 Skills which are important for secondary school students to acquire before graduating

Skills	Secondary school teachers		HE staff members	
	No(%)	Order	No(%)	Order
Abilities in problem solving, communications and decision making	156 (88.6%)	01	36 (75.0%)	01

Career awareness and the ability to make career and educational choices	111 (63.1%)	02	27 (56.3%)	03
Basic skills in use of common hand tools and machines	108 (61.4%)	03	29 (60.4%)	02
Work with others	92 (52.3%)	04	27 (56.3%)	03
Employability skills, such as promptness and dependability	89 (50.6%)	05	18 (37.5%)	06
Technical reading and writing	82 (46.6%)	06	26 (54.2%)	04
An awareness of and positive attitudes of safety procedures	78 (44.3%)	07	19 (39.6%)	05
Basic technical skills which are common to a cluster of jobs	68 (38.6%)	08	27 (56.3%)	03
Mathematical and computational skills	52 (29.5%)	09	19 (39.6%)	05
Knowledge of basic economic concepts	50 (28.8%)	10	14 (29.2%)	07
Technical skills which are specific to one job	39 (22.2%)	11	10 (20.8%)	08

The responses of higher education staff members and secondary school teachers were similar about the skills which are important for students to acquire before graduation. This result revealed that the skills which were given more weight are the basic skills needed by all types of jobs. Acquiring these broad basic skills will enable students to cope with the rapid technological change which has resulted from a rapid change in the skills required to perform different jobs effectively.

This result is similar to that specified by Ascher (1987) that public school programmes should prepare students to have a broad range of basic skills so as to be able to cope with rapid change, and by Zuga and Lindstrom (1989) who identified six clusters of general work, knowledge, skills and attitudes

for secondary vocational education programmes. If the schools provide only basic skills, more specific training will be needed either on-the-job or in other training centres. Full preparation for entry to work is a difficult task for schools to carry out. The involvement of industry is a necessary condition for this to be successful.

This finding raises the question of the ability and the willingness of different establishments to provide the necessary vocational training. In addition to that, no post-secondary school training centres are available. This may be the reason that higher education staff members and secondary school teachers agreed that there was a need for colleges within the existing universities for TVE school leavers.

Table 5.45 Colleges need to be established within the existing universities for TVE graduates

	Agree %	Neutral %	disagree %	Mean	SD
Higher education staff	72.9	12.6	14.6	3.9	1.5
Teachers	90.4	01.7	08.0	4.4	1.0
Male	88.4	1.7	10.0	4.4	1.1
Female	94.6	1.8	03.6	4.6	0.8
Academic	87.0	3.0	10.0	4.3	1.0
TVE	94.7	0.0	05.3	4.6	0.9
Below university degree	91.3	4.3	04.3	4.5	1.0
University degree	90.9	1.4	07.7	4.5	1.0
Post-graduate degree	80.0	0.0	20.0	4.0	1.4

5.7.2. The cost of provision of TVE

As the introduction of TVE into secondary schools was implemented on a large scale and quickly, the cost was expected to be high. This created a need for more expenditure

to implement the innovation successfully which was difficult in the situation of the Sudanese economy which is facing several problems (see chapter 2, p.13-15). Two of the officials from the Ministry of Education were against the way in which provision of TVE in the same school as academic subjects has been introduced especially at this time. They reported that the availability of enough funding is a necessary condition for its success. One of them stated that "The available resources and the expected needs are important reasons against providing TVE with academic subjects in the same school; additionally, there is a need for an adequate economic and education planning".

A majority of higher education staff members 95.8% and secondary school teachers 72.2% had the same views about the difficulty of making secondary education more technically and vocationally oriented. However, 75.0% of the former and 81.2% of the later reported that this problem could be solved, and suggested the following ways through which the required resources could be available:

- The allocation of more funds for this purpose by the government.
- The allocation of a small proportion of taxes.
- Contribution from the industrial, commercial and business enterprises.
- Preparation of a well-equipped training centres for a number of secondary schools to teach TVE subjects.

Table 5.46 Resources of funding TVE courses in schools

Source of funding	Higher education staff			Teachers		
	Agree %	Neutral %	Disagree %	Agree %	Neutral %	Disagree %
Government	81.3	00.0	18.7	88.6	00.6	10.8
Industry	95.8	02.1	02.1	72.2	21.6	06.3
Well-equipped centre	75.0	16.7	08.4	75.5	05.7	18.7
Fees	20.8	10.4	68.8	32.4	08.5	59.1

There was a high level of agreement (more than 70.0%) among both higher education staff members and secondary school teachers about the different methods of funding the introduction of TVE courses into secondary school curriculum.

These methods are similar to those applied by different countries to reduce the cost of introducing TVE into the secondary school curriculum. In the case of the Sudan, each of these methods has its own problems. It is clear that the government alone will not be able to finance the introduction of TVE courses in the secondary school curriculum because of the high cost associated with it and the economic condition of the country owing to the problems discussed in Chapter Two.

The private sector has an important role in financing and providing training opportunities for secondary school students in many countries. To what extent is the private sector in the Sudan is willing and able to contribute to financing TVE courses? The employers may not be willing to contribute in financing this type of education which will not prepare students according to their needs. One of the officials from the Ministry of Education stated that "the comprehensive school doesn't prepare students adequately for

the labour market, but it offers only pre-vocational education. So the government should provide all the required funds".

The preparation of well-equipped training centres for a group of secondary schools, or a mobile training centre may be a suitable solution, at least for the time being, for the problem of teaching practical aspects. Transportation between schools and the training centres will need to be available, and the scheduling of timetables for different schools carefully prepared.

5.7.3. The availability of well-trained TVE teachers

Significance differences were found in responses of higher education staff members and secondary school teachers, and male and female teachers to the idea that enough qualified TVE teachers will not be available if secondary schools become more technical and vocational (see tables 5.47). Secondary school teachers were in more direct contact with this problem than higher education staff members, and they have more experience about the problem of the shortage of TVE teachers. There is no shortage in TVE teachers for courses available in female schools because there are many sources for training teachers for commercial education and home economics which are the most available courses for female students.

Table 5.47 There will not be enough qualified TVE teachers if secondary schools become more technical and vocational

	Agree %	Neutral %	disagree %	Mean	SD
Higher education staff	52.1	12.5	35.4	3.3	1.1
Teachers	69.9	04.5	25.6	3.6	1.2
Male	72.7	04.1	23.2	3.7	1.2
Female	63.7	05.5	30.9	3.4	1.1
Academic	70.0	06.0	24.0	3.6	1.1
TVE	69.7	02.6	27.7	3.5	1.2
Below university degree	73.9	00.0	26.1	3.5	1.2
University degree	68.6	05.6	25.9	3.6	1.2
Post-graduate degree	80.0	00.0	20.0	3.8	1.3

The official from the Ministry of Education considered the shortage of well qualified teachers in the Sudan at this time as an obstacle for providing TVE and academic subjects in the same school. Owing to the shortage of qualified, well-trained TVE teachers the Ministry of Education employed TVE secondary school graduates as a teacher at the same level.

Moreover, all of the available Colleges of Education have programmes to prepare academic subject teachers. The shortage of qualified trained TVE teachers has existed for a long time (Sanyal and Yacoub, 1975 and Hashim, 1992) and hence it was obvious that this shortage would be more acute after the 1991 education reform. The need to prepare enough TVE subject teachers were seen by higher education staff members and secondary school teachers as important in implementing successfully the change to make the educational system more technically and vocationally oriented.

Table 5.48 Enough teachers should be trained before any change takes place

	Agree %	Neutral %	disagree %	Mean	SD
Higher education staff	85.5	04.2	10.4	4.0	0.9
Teachers	90.3	02.8	06.8	4.3	0.8
Male	90.7	02.5	06.6	4.4	0.9
Female	89.1	03.6	07.2	4.1	0.9
Academic	90.0	03.0	07.0	4.3	0.9
TVE	90.8	02.6	06.5	4.3	0.9
Below university degree	78.3	13.0	08.7	4.1	1.0
University degree	92.4	01.4	06.3	4.3	0.9
Post-graduate degree	90.0	00.0	10.0	4.7	1.0

Note:

1. Responses of students following:

- an academic curriculum and those with high socio-economic status to most of the statements tend to be similar.

- TVE curriculum and those with low socio-economic status to most of the statements tend to be similar.

2. It seems that female students were considering the available TVE courses for them in their responses to most of the statements.

Chapter 6, which follows, will explore the implication of these findings for policy development in the Sudan.

CHAPTER SIX
CONCLUSIONS AND RECOMMENDATIONS

6.1. Introduction:

The main objective of this chapter is to draw recommendations from the findings of this study for the improvement of the Sudanese secondary education in general and TVE in particular.

This study depended mainly on quantitative data collected by using questionnaires. The researcher made every possible effort to reduce the effect of different limitations associated with using a questionnaire as a research tool (see chapter 4). However, such effects can not be removed completely. Thus the conclusions upon which the following recommendations are made should be considered with necessary caution.

6.2. Reluctance of students to study TVE courses

According to different studies there is a belief that there is a feeling in the Sudan and other developing countries that TVE is seen as a second class type of education and that higher status is given to academic studies than to TVE. The publicly held opinion is that society in general, and students and teachers in particular, have negative views of TVE. This reluctance of students to study TVE courses has been linked to the negative views of TVE held by both students themselves and their parents. The reluctance of students to study TVE courses has been considered as an important factor which has prevented the realisation of the

objectives of a number of developmental plans (Al-Amin, (1986) and Abu Shanab, 1992). The result of this research indicates that students had a positive view of TVE. This is shown in chapter 5, table 5.3. Students' positive views of TVE are likely to be affected by the following factors:

* Expectations of better employment opportunities: (see chapter 5 page 3-4).

* The importance of TVE being stressed by parents: Children's views are likely to be influenced by their parents' views about TVE courses (see table 5.27).

* The influence of the 1991 education reforms: (see table 5.39).

Although students had positive views of TVE they were reluctant to follow TVE courses. This reluctance is likely to be affected by some combination of the following factors:

* Parents' influence: students were not encouraged by their parents to study TVE courses and were advised against studying TVE courses. Parents and teachers had important roles in the selection of students for the type of secondary education curriculum and hence to their career choice (see table 5.26). A considerable portion of parents thought that TVE courses were important but they did not encourage their children to follow such courses. Moreover, they tended to advise their children not to study TVE courses (see tables 5.27, 5.28 and 5.29).

* Occupational aspirations: contradictions were found between students' occupational aspirations and the effect that

studying TVE courses has on limiting students' opportunity to attend higher education (see tables 5.19 and 5.32).

* **Lack of sufficient information about TVE:** a considerable majority of students (62.2%) believed that not enough information about TVE was available to them. This lack of information is possibly the reason which resulted in a portion of students (29.4%) in their final year in secondary school being unable to choose their career (see table 5.19).

The result of this study suggests that all students should have equal opportunity to attend higher education and to continue their education to the highest possible level depending only on their abilities and interest not on the type of curriculum they follow (see tables 5.32, 5.36 and 5.37). This idea is reinforced by different studies reviewed in chapter 3, section 3.7.3.

- To achieve this objective of giving all students equal opportunity to attend higher education the following recommendations could be made:

- There is a need to design an integrated curriculum with a mix of academic and TVE subjects so that students can be prepared with the broad basic skills necessary for the labour market, and which at the same time allow them to go onto higher education (see tables 5.43 and 4.44). Studies reviewed in chapter 3, sections 3.6.3 and 3.7.3 informed us that such an integrated curriculum can firstly, facilitate the preparation of school leavers by giving them the chance to develop broad basic skills, and the knowledge and

attitudes which are needed in the rapidly changing job market as a result of rapid technological change. Secondly, when this type of curriculum has been designed, students' and parents' views of TVE may be more likely to change in favour of TVE, and hence more students will be likely to follow this type of education. It is important that a unit for curriculum development should be established to prepare a flexible curriculum in which both theoretical and practical components of different subjects can be emphasised.

- TVE subjects should be part of the process of selecting secondary school leavers to higher education (see tables 5.36 and 5.37).

- More part-time studies should be available for students, within further education colleges. These should be established within the existing universities (see table 5.45). The availability of these colleges will allow some school leavers to continue their education while they are working. In this way students may contribute to the cost of their education and training and hence reduce the cost of providing TVE courses. These ideas are stressed by the experiences of Sudan University of Science and Technology, the USA Community Colleges and the British City Colleges reviewed in chapter 3, sections 3.7.2 and 3.8.2.

- More information about TVE and the opportunities for those following TVE courses to go on to higher education and hence to employment should be available. The availability

of information is an important factor for students' career choice (see chapter 3, figure 3.4). This requires guidance and counselling services to be introduced into schools in order to provide students with the necessary information about TVE. This makes it an urgent requirement to introduce counselling and guidance in the teacher training colleges in order to prepare counsellors and to expand guidance services in schools. More information could be made available through different media.

6.3. Gender:

Male and female students' have similar positive views of TVE (see table 5.12). With regard to gender differences, this result disagrees with findings obtained from different studies reviewed earlier in chapter 3. Moreover, female students are restricted in their choice of TVE to a small number of TVE courses (see tables 5.14, 5.15 and 5.16). This coincides with trends in almost all countries (Minnesota State Commission on Economic status of women, 1986 and Silverman and Pritchard, 1993). Although female students have positive views of TVE, this type of education for girls has been expanded only very slowly in the past thirty years in the Sudan. TVE schools for girls expanded from 5 schools in 1979 to 20 in 1991. This compares with 45 and 221 respectively for academic girls schools in the same period. The enrolment for girls in TVE schools increased from 2321 to 6573 between 1979 and 1991, compared to 20829 and 106016 respectively for girls in academic schools (for more details see chapter 3, tables 3.1 and 3.2). The following

recommendations could be made to allow more girls to study this type of education:

- There is a need to expand TVE courses for female students, as 20 TVE schools for girls in the whole country is not enough. The positive view of TVE held by female students indicates that more of them are likely to follow TVE courses if they are made available. However, the expansion needs to consider the traditional, cultural and religious factors which affect the choice of the type of TVE courses. Any attempt to bring female students to study TVE courses other than those which are considered suitable for girls are likely to be rejected.

- More TVE subjects suitable for girls could be provided, instead of considering only on commerce education and home economics.

6.4. Type of curriculum and age:

The result of this study suggests that students following a TVE curriculum had a more positive view of TVE than those following an academic curriculum. This is shown in table 5.20. The high positive view scores held by students following a TVE curriculum is likely to be influenced by the level of importance parents put on studying TVE courses (see table 5.27) and by the availability of more information about TVE for them (see tables 5.30 and 5.31). As shown in table 5.24, students' views of TVE tend to be more positive as their age increases. To encourage students from different

ability groups to study TVE courses the following suggestions could be made:

- Some TVE subjects should be selected by all students as part of their graduation requirements.

- The process of selecting students for different types of curricula should be changed so that students with a range of abilities can be represented in different studies.

6.5. Higher education staff members and secondary school teachers:

Higher education staff members' and secondary school teachers' positive views of TVE (see table 5.4) reflect their dissatisfaction with the education system because of its ineffectiveness in preparing students properly for higher education and/or employment. The supply for the labour market of skilled and semi-skilled people for the national development needs, eliminating the barrier between theoretical and practical aspects of different subjects and giving more emphasis on academic subjects and creating inequality between those elite who have an opportunity to continue their education and those who were following TVE curriculum are important issues. Thus respondents expected that such a vocationalisaion of secondary education may better prepare students for higher education and the labour market; supply the labour market with its needs of the skilled and semi-skilled work force; cope with the technological advancement and the needs of the community, and reduce the barrier between theoretical and practical issues.

- The positive view of TVE which is held by teachers and higher education staff members could be used to enhance the success of the new system of comprehensive secondary school. Its development could contribute more effectively in reducing the problems associated with the previous educational system.

6.6. Economic issues:

Although there is a need to make secondary education more technically and vocationally oriented, large majorities of higher education staff members (95.8%) and secondary school teachers (72.2%) thought that it is financially difficult to do that. Additionally, they reported that they felt that schools should provide full preparation of students for work, i.e. to possess appropriate skills, and to be adaptable to the labour market needs (see tables 5.43 and 5.44). The government alone cannot provide the necessary funds for the provision of TVE in secondary schools to prepare students with the skills to meet the demand of labour market. To achieve that the following recommendations are made:

- Links could be established between secondary schools and public and private enterprises in order to provide training programmes at local institutions in order to give students practical experience in the labour market prior to graduation from secondary school, and also to contribute in the financing of TVE programmes.

- The government should raise the funds for the implementation of the new system of comprehensive schools by introducing some form of taxes.

- A well-equipped training centre should be established to serve a group of schools. Where schools are scattered with long distances between them, mobile training centres could be provided. These ideas are reinforced by the experiences of some developed and developing countries discussed in chapter 3, section 3.6.1.

- The duration should be increased for those selected to have more occupational training as a preparation for entering to the labour market after secondary school.

6.7. Teacher training:

A considerable majority (70.0%) of secondary school teachers and (52.1%) of higher education staff members reported that a shortage of qualified TVE teachers was expected if the secondary school is diversified (see tables 5.47 and 5.48). This result supports what has been said by Sanyal and Yacoub (1975) and Hashim (1992) about this problem in the Sudan. This situation could be improved in the Sudan by the following recommendations:

- More links should be established between the Ministry of Education, and Colleges of Education in order to train enough TVE teachers to meet the needs of secondary school in terms of TVE teachers and counsellors.

- TVE teacher training programmes similar to those being offered by the College of Education in the Sudan University of Science and Technology need to be established in other universities.

- Teachers should be prepared to incorporate theoretical and practical aspects of different subjects so that the division of teachers between academic and TVE components would be reduced. These suggestions are enhanced by the information presented in chapter 3, section 3.6.5)

6.7. Suggestions for further studies:

Owing to the nature of this study as a foundation research, and to the limitations associated with this study in the context of limited available of funds and time, it is important that more in-depth studies should be carried out in some of the issues presented in this study. Research should be carried out to:

1. find out the most influencial factors affecting students' views of TVE.

2. develop effective ways of encouraging more students to enrol in TVE courses by determining how:

- parents can be influenced to accept TVE courses as being positive for their children.

- best to use parent influence to encourage student enrolment in TVE

3. An overall study of the labour market in order to:

- find out its needs and capacity for providing the skilled and semi-skilled labour force for the present and the future. Moreover, how the private sector can contribute to financing TVE should be investigated.

- ascertain whether TVE programmes meet the labour market needs.

- improve the quality of TVE provision.

3. A study of how TVE subjects might be incorporated into the secondary school curriculum in a way that can both facilitate students' entry into the labour market, and leave the door open for entrance to higher education.

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APPENDIX A

Students' Questionnaire

APPENDIX A

SCHOOL OF EDUCATION
UNIVERSITY OF BATH

QUESTIONNAIRE

Dear student

This questionnaire is part of my research work at the University of Bath (U.K). I should be grateful if you could spare the time to complete and return it. Your responses will be treated confidentially.

The purpose of my research is to investigate people's ideas about the place of technical and vocational education (TVE) in the Sudanese secondary education system, in particular, the ways in which technical and vocational subjects might ensure that all students have a set of basic skills at the end of secondary schooling with which to enter the world of work or continue with their studies.

In the following questions please put a circle around the letter in front of the appropriate description of your condition or write the answers as appropriate.

1 GENDER

A Male

B Female

2 AGE

3 PLACE OF RESIDENCE ----------

4 In what type of school do you study?

A Academic

B Technical or Vocational

APPENDIX A (Continues)

5 What stream are you following?

A Arts

B Science

C Agriculture

D Commerce

E Mechanical or Electrical

F Building and Construction

G Other

If other, please specify

---

6 What is your father's occupation?

---

7 What is your mother's occupation?

---

8 What is your father's highest academic qualification?

A Post-Graduate Degree

B First Degree

C Secondary School Certificate

D Other

If other, please specify ----------

9 What is your mother's highest academic qualification?

A Post-Graduate Degree

B First Degree

C Secondary school Certificate

D Other

If others, please specify ----------

APPENDIX A (Continues)

INTRODUCTORY NOTES

In this research I am using these terms in the following ways:

1. Technical and Vocational Education (TVE) is a wide-ranging term refering to those aspects of the educational process which are in addition to a general academic education and which encompass the acquisition of attitudes, understanding, knowledge, and practical skills relating to employment, higher education and adult life. The following are examples of some of the occupational areas which would be relevant:
   Agriculture
   Business and commerce including economic, secretarial, and typing
   Health
   Home economics
   Trade and industry

2. Basic skills are those skills which are common to all types of occupations and which are necessary for effective performance. Examples would be: Computation, communication, inter-personal and learning skills.

PROCEDURES

Please answer all the following questions.

Please indicate your level of agreement with a statement by ticking the number which represents your opinion about TVE at the secondary school level in the Sudan.

The letters mean:

1 = Strongly agree (SA)
2 = Agree (A)
3 = Neutral (N)
4 = Disagree (D)
5 = Strongly disagree (SD)

APPENDIX A (Continues)

This is an example:	SA	A	N	D	SD
Sudan doesn't need TVE.	1	2	3	4	5

QUESTIONS

	SA	A	N	D	SD
1. I have a poor image of Technical and Vocational schools.	1	2	3	4	5
2. TVE prepares students for specific types of careers.	1	2	3	4	5
3. TVE could help me get a job in the future.	1	2	3	4	5
4. There is a lack of information about TVE.	1	2	3	4	5
5. TVE limits my opportunity to attend Higher Education	1	2	3	4	5
6. TVE is fine for students who do not go on to higher education.	1	2	3	4	5
7. TVE provides a good learning experience and opportunity.	1	2	3	4	5
8. My parents have stressed the importance of TVE.	1	2	3	4	5

APPENDIX A (Continue)

	SA	A	N	D	SD
9. TVE is a waste of my time.	1	2	3	4	5
10. All students at the secondary school level should follow some Technical and Vocational subjects.	1	2	3	4	5
11. TVE is for low ability students.	1	2	3	4	5
12. TVE narrows my career choice.	1	2	3	4	5
13. TVE helps me become better qualified for a career.	1	2	3	4	5
14. TVE has a bad reputation and poor image.	1	2	3	4	5
15. I considered following TVE courses when I transfered to secondary school.	1	2	3	4	5
16. Technical and vocational subjects should be seen as having equal value as academic subjects for entry to higher education.	1	2	3	4	5

APPENDIX A (Continues)

	SA	A	N	D	SD
17. Technical and Vocational subjects should be offered in the same secondary schools as academic subjects.	1	2	3	4	5
18. Girls and boys can study the same TechnicaL and vocational subjects.	1	2	3	4	5
19. Studying some Technical and Vocational subjects at secondary school should be an essential requirement for graduation.	1	2	3	4	5
20. If Technical and Vocational subject qualifications could be used for entry to higher education, I would be more likely to take Technical and Vocational subjects.	1	2	3	4	5
21. TVE prepares me for a job directly after secondary school.	1	2	3	4	5
22. I dislike technical and vocational schools.	1	2	3	4	5
23. The division of students into different schools at the end of intermediate level of schooling causes TVE to be unpopular with students.	1	2	3	4	5

APPENDIX A (Continue)

	SA	A	N	D	SD
24. Technical and Vocational subjects should be optional subjects at secondary school.	1	2	3	4	5
25. There is no need for change in the existing system of entry to Higher Education.	1	2	3	4	5
26. Technical and Vocational subjects are not suitable for Sudanese girls.	1	2	3	4	5
27. My parents encouraged me to study TVE.	1	2	3	4	5
28. Studying TVE is important for me because I think it will be useful in getting a job.	1	2	3	4	5
29. Girls should be provided with different Technical and Vocational subjects than boys.	1	2	3	4	5
30. I do not know any thing about TVE.	1	2	3	4	5
31. I didn't give much thought about attending technical and vocational schools.	1	2	3	4	5

APPENDIX A (Continue)

32. My parents advised me against enrolling in TVE. 1 2 3 4 5

---

33. Put the following in order of their influence on your decision to select your secondary school. Put 1 in front of the most influencial person.

____ A Teacher
____ B Father
____ C Mother
____ D Relatives
____ E Friends
____ F Others

If others, please pecify _____

---

34. Have you selected your future career? Yes NO

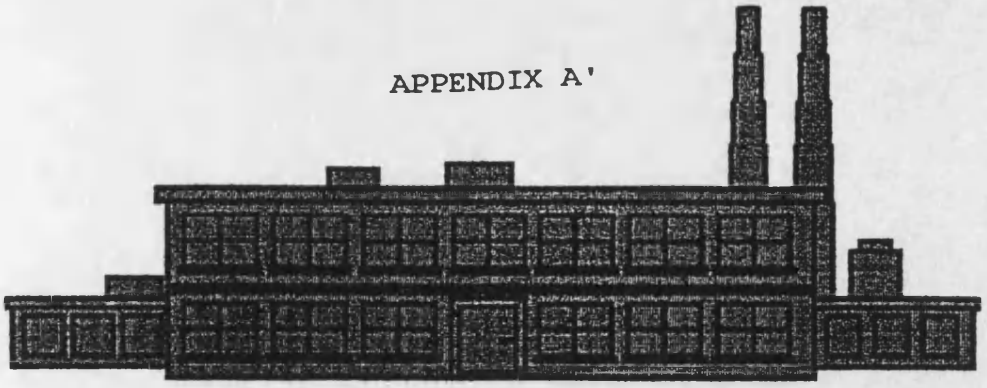
If Yes
What is it? _____

Thank you for completing and returning this questionnaire.

APPENDIX A'

Students' Questionnaire (Arabic version)

APPENDIX A'



جامعة باث كلية التربية

الاخ/ الطالب

هذا الاستبيان هو جزء من بحث اقوم به لنيل درجة الدكتوراه من جامعة باث بالمملكة المتحدة واكون شاكرا لو تكرمت باعطاء جزء من وقتك الغالي لاكماله وارجاعه.

الهدف من هذا البحث هو محاولة معرفة اراء المعلمين والطلاب وذوي الاختصاص عن موقع التعليم الفني والمهني في نظام التعليم الثانوي السوداني وبصفة خاصة الطرق التي يمكن بها للمواد الفنية والمهنية ان تؤكد على حصول كل الطلاب عند تخرجهم من المرحلة الثانوية على المهارات الاساسية التي تمكنهم من دخول سوق العمل او الاستمرار في التعليم فوق الثانوي.
اتمنى ان اتمكن من استعمال المعلومات الواردة في هذا الاستبيان لصيغة مؤشرات السياسة التعليمية في هذا المجال.

ان المعلومات التي ستدلي بها سوف تستخدم لغرض البحث فقط. الرجاء الاجابة على الاسئلة التالية بوضع علامة (✓) في المربع امام الوصف الذي يتناسب مع وضعك او كتابة الاجابة في المكان المخصص لذلك.

١ الجنس

١ ذكر ☐

٢ انثى ☐

٢ العمر: _____

٣ مكان السكن الحالي: _____

٤ نوع المدرسة الثانوية التي تلتحق بها الان:

١ اكاديمية ☐

٢ فنية او مهنية ☐

٥ ما هو المساق الذي تتبعه؟

١ ادبي ☐
٢ علمي ☐
٣ زراعي ☐
٤ تجاري ☐
٥ ميكانيكا او كهرباء ☐
٦ مباني وانشاءات ☐
٧ غيره ما هو؟_____

٦ ما هي وظيفة الوالد؟_____

٧ ما هي وظيفة الوالدة؟_____

٨ ما هو اعلى مستوى تعليمي للوالد؟

١ بدون تعليم ☐
٢ تعليم ابتدائي ☐
٣ تعليم متوسط ☐
٤ تعليم ثانوي ☐
٥ تعليم فوق الثانوي ☐

٩ ما هو اعلى مستوى تعليمي للوالده؟

١ بدون تعليم ☐
٢ تعليم ابتدائي ☐
٣ تعليم متوسط ☐
٤ تعليم ثانوي ☐
٥ تعليم فوق الثانوي ☐

معلومات توضيحية

في هذا البحث الكلمات الموضحة ادناه تعني ما يأتي:

١ التعليم الفني والمهني هو مصطلح واسع يشير الى جوانب العملية التعليمية والتي تشمل بالاضافة الى التعليم الاكاديمي العام حصول الطالب على الاتجاهات والفهم والمعرفة والمهارات العملية المتصلة بصفة عامة بالعمل والتعلم والحياة الراشدة. فيما يلي بعض الامثلة للمهن والوظائف في مجال التعليم الفني والمهني:

١ الدراسات الزراعية.
٢ الدراسات الاقتصادية والتجارية وتشمل على (السكرتارية والطباعة والمحاسبة وغيرها.
٣ الدراسات الصحية.
٤ الاقتصاد المنزلي,
٥ الدراسات الصناعية والفنية مثل (الميكانيكا, الكهرباء, المباني والانشاءات وغيرها.

٢ المهارات الاساسية وهي المهارات المشتركة والضرورية للاداء الفعال لكل انواع المهن والوظائف, مثال ذلك: الحساب, التعبير والاتصال, العلاقات بين الافراد ومهارات التعلم.

طريقة ملىء الاستمارة

الرجاء الاجابة على كل الاسئلة التالية:
الرجاء توضيح درجة اتفاقك مع ما ورد في كل جملة بوضع دائرة حول الرقم الذي يشير الى رايك عن التعليم الفني والمهني في المرحلة الثانوية السودانية.

١= اوافق بشدة.
٢= اوافق.
٣= لا راي لي.
٤= لا اوافق.
٥= لا اوافق بشدة.

مثال ذلك: السودان لا يحتاج للتعليم الفني والمهني
١ ٢ ٣ (٤) ٥

١-اوافق بشدة. ٢- اوافق. ٣- لا راي لي. ٤- لا اوافق. ٥- لا اوافق بشدة.

١	نظرتي للتعليم الفني متدنية.	١	٢	٣	٤	٥
٢	التعليم الفني والمهني يؤهل الطالب لاعمال محددة.	١	٢	٣	٤	٥
٣	دراسة التعليم الفني والمهني قد تساعدني في المستقبل في الحصول على عمل.	١	٢	٣	٤	٥
٤	لا توجد معلومات كافية عن التعليم الفني والمهني.	١	٢	٣	٤	٥
٥	دراسة التعليم الفني والمهني تحد من فرصتي للالتحاق بالتعليم العالي.	١	٢	٣	٤	٥
٦	دراسة التعليم الفني مفيده للطلاب الذين لا يودون الالتحاق بالتعليم العالي.	١	٢	٣	٤	٥
٧	دراسة التعليم الفني والمهني تعطي خبرة تعليمية وفرص جيدة.	١	٢	٣	٤	٥
٨	يؤكد والدي على اهمية التعليم الفني والمهني.	١	٢	٣	٤	٥
٩	دراسة التعليم الفني والمهني مضيعة للوقت.	١	٢	٣	٤	٥
١٠	يجب ان يدرس كل الطلاب بعض المواد الفنية والمهنية في المرحلة الثانوية.	١	٢	٣	٤	٥
١١	التعليم الفني والمهني للطلاب الاقل ذكاءاً.	١	٢	٣	٤	٥

١-اوافق بشدة. ٢- اوافق. ٣- لا راي لي. ٤- لا اوافق. ٥- لا اوافق بشدة.

١٢	دراسة التعليم الفني والمهني تحد من فرصتي لاختيار الوظائف المختلفة.	١	٢	٣	٤	٥
١٣	دراسة التعليم الفني والمهني تساعد على تأهيل الطلاب.	١	٢	٣	٤	٥
١٤	سمعة التعليم الفني والمهني سيئة.	١	٢	٣	٤	٥
١٥	كنت مخططا للالتحاق بالتعليم الفني والمهني.	١	٢	٣	٤	٥
١٦	يجب ان تعتبر المواد الفنية والمهني ذات قيمة مساوية للمواد الاكاديمية.	١	٢	٣	٤	٥
١٧	من المستحسن ان تدرس المواد الفنية والمهنية والاكاديمية في نفس المدرسة.	١	٢	٣	٤	٥
١٨	يمكن ان يدرس البنين والبنات نفس المواد الفنية والمهنية.	١	٢	٣	٤	٥
١٩	يجب ان تعتبر دراسة بعض المواد الفنية والمهنية من المتطلبات الاساسية للتخرج من المرحلة الثانوية.	١	٢	٣	٤	٥
٢٠	اذا جعلت المواد الفنية والمهنية من المواد المنافسة للتعليم العالي فان المزيد من الطلاب في المرحلة الثانوية سيختارون المساق الفني والمهني.	١	٢	٣	٤	٥
٢١	دراسة التعليم الفني والمهني تؤهل الطلبة للحصول على عمل بعد التخرج مباشرة.	١	٢	٣	٤	٥

٣٣ هولاء الاشخاص قد يكون لهم دور في اختيارك لنوع التعليم الثانوي
ضع رقم (١) امام الشخص الاكثر تأثيرا.
ضع رقم (٢) امام الشخص الذي يليه في الاهمية وهكذا.
بمكنك اختيار اي عدد منهم:

١ المعلم
٢ الوالد
٣ الوالدة
٤ الاقرباء
٥ الاصدقاء
٦ وغيرهم, من هم؟_____

٣٤ هل حددت الوظيفة او العمل الذي ترغب فيه في المستقبل؟

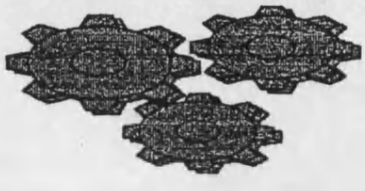
١ نعم ☐
٢ لا ☐

اذا كانت الاجابة نعم, ما هي الوظيفة او العمل الذي تم اختياره؟

_____

٣٥ اي هذه الاعمال والمهن لم تفكر مطلقا في اختيارها كمهنة لك في المستقبل؟ ضع علامة X امام اي مهنة او عمل لم تفكر فيه:

١ مهندس ☐
٢ معلم ☐
٣ محاسب ☐
٤ فني مجاري ☐
٥ ميكانيكي سيارات ☐
٦ كهربائي ☐
٧ فني كمبوتر ☐
٨ محامي ☐
٩ رجل شرطة ☐
١٠ فني مباني ☐
١١ طبيب ☐
١٢ سائق ☐



APPENDIX B

Secondary school teachers' and higher education staff members' Questionnaire

APPENDIX B

SCHOOL OF EDUCATION

UNIVERSITY OF BATH

QUESTIONNAIRE

Dear colleague

This questionnaire is part of my research work at the University of Bath (U.K). I should be grateful if you could spare the time to complete and return it. Your responses will be treated confidentially.

The purpose of my research is to investigate people's ideas about the place of technical and vocational education (TVE) in the Sudanese secondary education system, in particular, the ways in which technical and vocational subjects might ensure that all students have a set of basic skills at the end of secondary schooling with which to enter the world of work or continues with their studies. I hope to be able the questionnaire data so that policy pointers can be formulated and any resource, organiltional and curriculum implications and reforms highlighted.

In the following questions please put a circle around the letter in front of the appropriate description of your condition or write the answers as appropriate.

1 GENDER

A Male

B Female

2 AGE ----------

3 PLACE OF RESIDENCE ----------

APPENDIX B (Continues)

Agriculture

Business and commerce including economic, secretarial, and typing.

Health

Home economics

Trade and industry

2. Basic skills are those skills which are common to all types of occupations and which are neceslry for effective performance. Examples would be: Computation, communication, inter-personal and learning skills.

PROCEDURES

Please answer all the following questions.

Please indicate your level of agreement with a statement by ticking the number which represents your opinion about TVE at the secondary school level in the Sudan.

The letters mean:

1 = Strongly agree (SA)

2 = Agree (A)

3 = Neutral (N)

4 = Disagree (D)

5 = Strongly disagree (SD)

This is an example:

	SA	A	N	D	SD
Sudan doesn't need TVE.	1	2	3	4	5

APPENDIX B (c0ntinues)

1.	TVE should only be provided for academically less able pupils.	1	2	3	4	5
2.	It is better to establish more universities for school graduates with academic qualifications than to spend money on TVE at the school level.	1	2	3	4	5
3.	School should not train students for particular jobs.	1	2	3	4	5
4.	Introducing technical and vocational subjects into secondary schools may change positively how students think about work and jobs.	1	2	3	4	5
5.	The main objective of the Sudanese secondary education is to prepare students for higher education	1	2	3	4	5
6.	The government should finance all TVE in secondary schools.	1	2	3	4	5
7.	Industrial, commercial and business enterprises should contribute to financing TVE in secondary school.	1	2	3	4	5
8.	Colleges need to be established within existing universities for TVE graduates	1	2	3	4	5

APPENDIX B (continues)

9. Secondary school graduates need opportunities for work and part-time study at the 1me time.	1	2	3	4	5
10. TVE is better offered in special centres apart from the existing educational system	1	2	3	4	5
11. It is better to provide TVE after secondary school for those students who are interested in it.	1	2	3	4	5
12. TVE is seen by Sudanese society as second class of education.	1	2	3	4	5
13. The division of students into different higher education institutions causes TVE to be unpopular with students.	1	2	3	4	5
14. The existing vocational and technical schools have failed to prepare students properly for working life.	1	2	3	4	5
15. If the curriculum at the secondary level becomes more technically and vocationally oriented, students will be better prepared for higher education and work.	1	2	3	4	5

APPENDIX B (Continues)

	SA	A	N	D	SD
16. Provision of courses such as, typing, secretarial, home economics and commercial subjects at the secondary school level will be more useful for girls than boys.	1	2	3	4	5
17. Only a small percentage of taxes will be needed to finance the introduction of TVE into secondary schools.	1	2	3	4	5
18. Financial problems can be solved and should not be an obstacle to changing the education system.	1	2	3	4	5
19. Well-equipped centres for teaching technical and vocational subjects for a group of secondary schools would help to reduce costs.	1	2	3	4	5
20. The existing vocational and technical schools have failed to prepare students adequately for entry to higher education.	1	2	3	4	5
21. The economic condition of the Sudan will make it difficult to make secondary education more technical and vocational.	1	2	3	4	5

APPENDIX B (continues)

	SA	A	N	D	SD
22. If technical and vocational subjects are provided in the secondary school curriculum they will impair student's ability to go to higher education.	1	2	3	4	5
23. There will be a problem of providing technical and vocational courses for girls.	1	2	3	4	5
24. Students following vocational and technical courses in school should not be prepared for higher education.	1	2	3	4	5
25. There is no need for any change in the existing system of entry to higher education.	1	2	3	4	5
26. Training for specific jobs should be in post-secondary institutions.	1	2	3	4	5
27. The existing technical and vocational schools should be changed to provide a 100% academic curriculum.	1	2	3	4	5
28. The division of pupils into different schools at the end of the intermediate level of schooling causes TVE to be unpopular with pupils.	1	2	3	4	5

APPENDIX B (continues)

	SA	A	N	D	SD
29. All students at the secondary level should have some TVE.	1	2	3	4	5
30. All students should study some academic courses up to the end of secondary school.	1	2	3	4	5
31. The existing secondary school system is unsuitable for the Sudan's technical and vocational needs.	1	2	3	4	5
32. Making the secondary school curriculum more vocationally and technologically oriented will contribute to the economic development of the country by preparing a well trained work force	1	2	3	4	5
33. The extent of technological change in Sudanese society is one of the main reasons for offering technical and vocational courses at secondary school level.	1	2	3	4	5
34. There will not be enough qualified vocational and technical teachers if secondary school become more vocational and technical.	1	2	3	4	5

APPENDIX B (continues)

	SA	A	N	D	SD
35. Enough teachers should be trained before any change takes place.	1	2	3	4	5
36. The existing educational system should changed to make it be more technically and vocationally oriented.	1	2	3	4	5
37. If vocational and technical subject qualifications could be used for entry to higher education, more students will take technical and vocational subjects in secondary schools.	1	2	3	4	5
38. Too few people leaving secondary schools have an opportunity to progress to higher education.	1	2	3	4	5
39. Taking TVE courses at the secondary level could help some school leavers find jobs.	1	2	3	4	5
40. The public and private sector should both contribute to paying for TVE.	1	2	3	4	5
41. Vocational and technical subjects are not suitable for Sudanese girls.	1	2	3	4	5

APPENDIX B (continues)

	SA	A	N	D	SD
42. There is a shortage of skilled and semi-skilled people in the Sudanese labour force.	1	2	3	4	5
43. The establishment of further education colleges will allow some students to contribute to the cost of their education by having work and part-time education.	1	2	3	4	5
44. Technical and vocational subjects should be considered as having equal value as academic subjects for entry to higher education.	1	2	3	4	5
45. All secondary schools should offer courses in basic skills.	1	2	3	4	5
46. Some form of knowledge about work should be introduced in the primary school.	1	2	3	4	5
47. It is better to teach vocational and technical subjects in the same secondary schools as academic subjects.	1	2	3	4	5

APPENDIX B (continues)

	SA	A	N	D	SD
48. There is a great need for more TVE in the Sudan at this time to prepare students for gainful employment.	1	2	3	4	5
49. The percentage of vocational and technical schools in the existing secondary school system should be increased	1	2	3	4	5
50. The secondary school system of education is a major cause of the high rate of unemployment for school leavers.	1	2	3	4	5
51. The secondary school system is a main cause of the shortage of skilled-people in the labour force.	1	2	3	4	5
52. There will be inequality between girls and boys if vocational and technical courses are implemented in secondary schools.	1	2	3	4	5
53- Secondary school students should pay fees for their education.	1	2	3	4	5
54. Girls and boys can study the 1me vocational and technical subjects.	1	2	3	4	5

APPENDIX B (continues)

	SA	A	N	D	SD
55. Vocational and technical classes should be introduced from the first year in secondary school.	1	2	3	4	5
56. Studying vocational and technical subjects in secondary schools prepares students for self-employment	1	2	3	4	5
57. Theoretical and practical aspects of any subject should complement each other.	1	2	3	4	5
58. Vocational and technical classes should be introduced after the completion of the first year in the secondary school.	1	2	3	4	5
59. All secondary schools should provide full preparation for entry to work.	1	2	3	4	5
60. TVE will prepare students to possess transferable occupational skills to cope with the changing technology.	1	2	3	4	5
61. TVE should be adaptable to the labour market needs.	1	2	3	4	5

APPENDIX B (continues)

	SA	A	N	D	SD
62. Studying some technical and vocational subjects at the secondary school should be an essential requirement for graduation.	1	2	3	4	5
63. Technical and vocational subjects should be optional subjects at secondary school.	1	2	3	4	5

64- Put a circle around the letter in front of the subject/s which all students should study in secondary school.

A-	mathematics	B-	general science
C-	Arabic language	D-	English language
E-	technology	F-	environmental education
G-	religion	H-	history
I-	geography	J-	civics.
K-	home economics	L-	Simple agriculture
M-	Gardening	N-	Farming
O-	Computer	P-	Technical drawing
Q-	Business principles	R-	Typing
S-	Art education	T-	Physical education
U-	Electricity	V-	Mechanical

APPENDIX B (continues)

65. Select the skills which are important for secondary school students to acquire before graduation putting 1 in front of the most important skill, 2 in front of the next-most important and continue until you reach the least important

..... A - Abilities in problem solving, communications and decision making.

..... B - An awareness of, and positive attitudes towards safety procedures

..... C - Work with others

..... D - Basic skills in use of common hand tools and machines

..... E - Technical reading and writing

..... F - Mathematical and computational skills

..... G - Employability skills, such as promptness, dependability.

..... H - Basic technical skills which are common to a cluster of jobs

..... I - Knowledge of basic economic concepts

..... J - Technical skills which are specific to one job

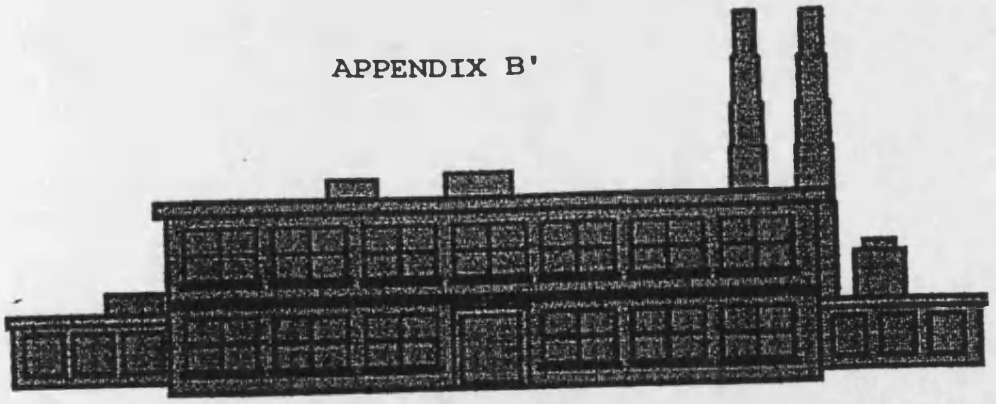
..... K - Career awareness and the ability to make career and educational choices.

Thank you for completing and returning this questionnaire

APPENDIX B'

Secondary school teachers' and higher education staff members' Questionnaire (Arabic version)

APPENDIX B'



جامعة باث كلية التربية

الاخ/ الاستاذ

هذا الاستبيان هو جزء من بحث اقوم به لنيل درجة الدكتوراه من جامعة باث بالمملكة المتحدة واكون شاكرا لو تكرمت باعطاء جزء من وقتك الغالي لاكماله وارجاعه.

الهدف من هذا البحث هو محاولة معرفة اراء المعلمين والطلاب وذوي الاختصاص عن موقع التعليم الفني والمهني في نظام التعليم الثانوي السوداني وبصفة خاصة الطرق التي يمكن بها للمواد الفنية والمهنية ان تؤكد على حصول كل الطلاب عند تخرجهم من المرحلة الثانوية على المهارات الاساسية التي تمكنهم من دخول سوق العمل او الاستمرار في التعليم فوق الثانوي. اتمنى ان اتمكن من استعمال المعلومات الواردة في هذا الاستبيان لصيغة مؤشرات السياسة التعليمية في هذا المجال.

ان المعلومات التي ستدلي بها سوف تستخدم لغرض البحث فقط. الرجاء الاجابة على الاسئلة التالية بوضع دائرة حول الرقم امام الوصف الذي يتناسب مع وضعك، او كتابة الاجابة في المكان المخصص لذلك.

١ الجنس

١ ذكر ☐

٢ انثى ☐

٢ العمر: _____

٣ مكان السكن الحالي: _____

٤ المهنة:

١ عضو هيئة تدريس في مؤسسة تعليمية بعد المرحلة الثانوية. ☐

٢ عضو هيئة تدريس في المرحلة الثانوية. ☐

٥ المؤهلات:

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٦ اسم المدرسة التي تعمل بها:

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٧ نوع المدرسة الثانوية التي تلتحق بها الان:

١ اكادمية ☐

٢ فنية او مهنية ☐

٨ اذا كنت معلما في مدرسة فنية او مهنية ما هي المواد التي تقوم بتدريسها؟

١ مواد اكادمية. ☐

٢ مواد فنية. ☐

٣ مواد اكادمية وفنية. ☐

معلومات توضيحية

في هذا البحث الكلمات الموضحة ادناه تعني ما يأتي:

١ التعليم الفني والمهني هو مصطلح واسع يشير الى جوانب العملية التعليمية والتي تشمل بالاضافة الى التعليم الاكاديمي العام حصول الطالب على الاتجاهات والفهم والمعرفة والمهارات العملية المتصلة بصفة عامة بالعمل والتعلم والحياة الراشدة. فيما يلي بعض الامثلة للمهن والوظائف في مجال التعليم الفني والمهني:

١ الدراسات الزراعية.
٢ لدراسات الاقتصادية والتجارية وتشمل على (السكرتارية والطباعة والمحاسبة وغيرها.
٣ الدراسات الصحية.
٤ الاقتصاد المنزلي,
٥ الدراسات الصناعية والفنية مثل (الميكانيكا, الكهرباء, المباني والانشاءات وغيرها.

٢ المهارات الاساسية وهي المهارات المشتركة والضرورية للاداء الفعال لكل انواع المهن والوظائف, مثال ذلك: الحساب, التعبير والاتصال, العلاقات بين الافراد ومهارات التعلم.

طريقة ملىء الاستمارة

الرجاء الاجابة على كل الاسئلة التالية:
الرجاء توضيح درجة اتفاقك مع ما ورد في كل جملة بوضع دائرة حول الرقم الذي يشير الى رائك عن التعليم الفني والمهني في المرحلة الثانوية السودانية.

١= اوافق بشدة.
٢= اوافق.
٣= لا راي لي.
٤= لا اوافق.
٥= لا اوافق بشدة.

مثال ذلك: السودان لا يحتاج للتعليم الفني والمهني
(١) ٢ ٣ ٤ ٥

١	يجب ان يقبل الطلاب الاقل مقدرة اكاديمية في التعليم الفني والمهني.	١	٢	٣	٤	٥
٢	يستحسن انشاء مزيد من الجامعات، لحملة الشهادات الثانوية الاكادمية بدلا من صرف الاموال في التعليم الفني والمهني.	١	٢	٣	٤	٥
٣	المدرسة يجب ان لا تدرب الطلاب لمهنة محددة.	١	٢	٣	٤	٥
٤	ادخال المواد الفنية والمهنية في منهج المرحلة الثانوية قد يغير ايجابيات نظرة الطلاب للاعمال اليدوية,	١	٢	٣	٤	٥
٥	الهدف الاساسي للتعليم الثانوي الحالي هو تأهيل الطلاب للتعليم الجامعي فقط.	١	٢	٣	٤	٥

١-اوافق بشدة. ٢- اوافق. ٣- لا راي لي. ٤- لا اوافق. ٥- لا اوافق بشدة.

١٦	ادخال مواد دراسية مثل الطباعة على الالة الكاتبة, السكرتارية, الاقتصاد المنزلي والمواد الالتجارية في منهج المرحلة الثانوية ستكون ذات فائدة اكبر للفتاة.	١	٢	٣	٤	٥
١٧	يمكن ان يوجه جزء مئوي بسيط من الضرائب لتمويل المواد الفنية والمهنية في المرحلة الثانوية.	١	٢	٣	٤	٥
١٨	يمكن ايجاد حل لمشكلة التمويل ولن يكون ذلك عائقا امام ادخال مواد فنية ومهنية في المرحلة الثانوية.	١	٢	٣	٤	٥
١٩	توفير مراكز مجهزة لتدريس المواد الفنية والمهنية لكل مجموعة من المدارس الثانوية سيساعد على تخفيض التكلفة.	١	٢	٣	٤	٥
٢٠	لقد فشل التعليم الفني والمهني القائم في تأهيل الطلاب للالتحاق بالتعليم العالي.	١	٢	٣	٤	٥
٢١	في ظروف السودان الاقتصادية الحالية سيكون من الصعب تحويل التعليم الثانوي ليكون ذا توجه فني ومهني.	١	٢	٣	٤	٥
٢٢	اذا ادخلت المواد الفنية والمهنية في منهج المرحلة الثانوية فسيعوق ذلك مقدرة الطالب للالتحاق بالتعليم العالي.	١	٢	٣	٤	٥
٢٣	ستكون هناك مشكلة في توفير المواد الدراسية الفنية للتعليم العالي.	١	٢	٣	٤	٥

APPENDIX B' (continues)

١-اوافق بشدة. ٢- اوافق. ٣- لا راي لي. ٤- لا اوافق. ٥- لا اوافق بشدة.

٢٤	يجب الا يؤهل الطالب الذي يتبع المساق الفني والمهني للتعليم العالي.	١	٢	٣	٤	٥
٢٥	ليست هناك اي حاجة لتغيير نظام القبول الحالي للتعليم العالي.	١	٢	٣	٤	٥
٢٦	يجب ان يكون التدريب للمهن والوظائف المحددة في مرحلة التعليم العالي.	١	٢	٣	٤	٥
٢٧	التعليم الفني والمهني الحالي يجب، ان يغير ليكون المنهج اكاديميا بنسبة ١٠٠٪.	١	٢	٣	٤	٥
٢٨	طريقة توزيع الطلاب على المدارس المختلفة بعد المرحلة المتوسطة هي غير مرغوب للطلاب .	١	٢	٣	٤	٥
٢٩	يجب ان يدرس كل طلاب المرحلة الثانوية بعض المواد الثانوية.	١	٢	٣	٤	٥
٣٠	يجب ان يدرس كل الطلاب بغض المواد الاكاديمية حتى نهاية المرحلة الثانوية.	١	٢	٣	٤	٥
٣١	النظام الحالي للتعليم الثانوي غير مناسب لاحتياجات السودان الفنية والمهنية.	١	٢	٣	٤	٥
٣٢	اتغيير منهج المرحلة الثانوية ليكون فنيا ومهنيا سيساهم في تطوير السودان اقتصاديا بتوفير القوى البسرية المدربة.	١	٢	٣	٤	٥

١-اوافق بشدة. ٢- اوافق. ٣- لا راي لي. ٤- لا اوافق. ٥- لا اوافق بشدة.

٣٣	التطور التكنلوجي هو احد الاسباب الرئيسية لادخال المواد الفنية والمهنية في منهج المرحلة الثانوية.	١	٢	٣	٤	٥
٣٤	اذا حول التعليم الثانوي ليكون فنيا ومهنيا اكثر لن يكون هنالك العدد الكافي من المعلمين المؤهلين لتدريس المواد الفنية والمهنية.	١	٢	٣	٤	٥
٣٥	يجب تدريب العدد الكافي من المعلمين قبل اجراء اي تغيير في نظام التعليم الثانوي.	١	٢	٣	٤	٥
٣٦	من المستحسن تغيير النظام التعليمي ا لحالي ليكون اكثر فنيا.	١	٢	٣	٤	٥
٣٧	اذا جعلت المواد الفنية من مواد المنافسة للالتحاق بالتعليم العالي فان المزيد من الطلاب في المرحلة الثانوية سيختارون المساق الفني والمهني.	١	٢	٣	٤	٥
٣٨	عدد قليل من خريجي المدارس الثانوية يجدون فرصصا في التعليم العالي.	١	٢	٣	٤	٥
٣٩	قد تساعد دراسة التعليم الفني والمهني في المرحلة الثانوية بعض الخريجيين في الحصول على عمل.	١	٢	٣	٤	٥
٤٠	على القطاعين العام والخاص المساهمة في تمويل التعليم الفني والمهني.	١	٢	٣	٤	٥

١-اوافق بشدة. ٢- اوافق. ٣- لا راي لي. ٤- لا اوافق. ٥- لا اوافق بشدة.

٤١	دراسة المواد الفنية والمهنية غير مناسبة للبنت السودانية.	١	٢	٣	٤	٥
٤٢	هناك نقص في القوى الماهرة وشبه الماهرة في سوق العمالة السودانية.	١	٢	٣	٤	٥
٤٣	انشاء كليات للدراسات الاضافية سيسمح لبعض الطلاب في المساهمة في نفقات تعليمهم وذلك بالعمل والدراسة لبعض الوقت.	١	٢	٣	٤	٥
٤٤	يجب ان تعتبر المواد الفنية والمهنية ذات قيمة متساوية للمواد الاكاديمية للالتحاق بالتعليم العالي.	١	٢	٣	٥	٥
٤٥	يجب ان تدرس كورسات في المهارات الاساسية في كل المدارس الثانوية.	١	٢	٣	٤	٥
٤٦	يجب ادخال بعض صور المعرفة عن العمل منذ المرحلة الابتدائية.	١	٢	٣	٤	٥
٤٧	من المستحسن ان تدرس المواد الفنية والمهنية والاكاديمية في نفس الدرسة.	١	٢	٣	٤	٥
٤٨	هناك احتياج كبير للمزيد من التعليم الفني والمهني في السودان لتأهيل الطلاب لاعمال مربحة.	١	٢	٣	٤	٥
٤٩	يجب ان تزاد نسبة المدارس الفنية والمهنية في النظام التعليمي القائم.	١	٢	٣	٤	٥

١-اوافق بشدة. ٢- اوافق. ٣- لا راي لي. ٤- لا اوافق. ٥- لا اوافق بشدة.

٥٠	نظام التعليم الثانوي الحالي هو السبب الاساسي في ارتفاع نسبة البطالة بين خريجي هذه المرحلة.	١	٢	٣	٤	٥
٥١	نظام التعليم الثانوي الحالي هو السبب الاساسي في نقص العمالة الماهرة وشبه الماهرة.	١	٢	٣	٤	٥
٥٢	اذا ادخلت المواد الفنية والمهنية في المرحلة الثانوية فسيكون هناك عدم مساواة بين البنين والبنات.	١	٢	٣	٤	٥
٥٣	على طلاب المدارس الثانوية دفع رسوم دراسية لتغطية نفقات تعليمهم.	١	٢	٣	٤	٥
٥٤	يمكن ان يدرس البنين والبنات نفس المواد الفنية والمهنية.	١	٢	٣	٤	٥
٥٥	يجب ادخال المواد الفنية والمهنية في منهج المرحلة الثانوية اعتبارا من السنة الاولى.	١	٢	٣	٤	٥
٥٦	دراسة المواد الفنية والمهنية تؤهل الطالب للتوظيف الذاتي.	١	٢	٣	٤	٥

١=اوافق بشدة. ٢= اوافق. ٣= لا راي لي. ٤= لا اوافق. ٥= لا اوافق بشدة.

٥٧	يجب ان يكمل الجانبان النظري والعملي لاي مادة بعضها بعضا.	١	٢	٣	٤	٥
٥٨	يجب ادخال المواد الفنية والمهنية في منهج المرحلة الثانوية بعد اكمال السنة الاولى.	١	٢	٣	٤	٥
٥٩	يجب توفير التدريب الكامل للالتحاق بالمهن والوظائف المختلفة في كل المدارس الثانوية.	١	٢	٣	٤	٥
٦٠	يجب ان يؤهل التعليم الفني والمهني الطلاب بالمهارات التي يمكن ان تتلاء م مع التحول التكنولوجي.	١	٢	٣	٤	٥
٦١	يجب ان يكون التعليم الفني والمهني متمشيا مع احتياجات سوق العمالة.	١	٢	٣	٤	٥
٦٢	دراسة بعض المواد الفنية والمهنية يجب ان تكون من المتطلبات الاساسية للتخرج من المرحلة الثانوية.	١	٢	٣	٤	٥
٦٣	يجب ان تكون المواد الفنية والمهنية موادا اختيارية.	١	٢	٣	٤	٥

٦٤ ضع علامة (✓) في المربع اما م المواد التي يجب ان يدرسها كل الطلاب (اجبارية) في المدرسة الثانوية:

١	الرياضيات	☐
٢	العلوم	☐
٣	اللغة العربية	☐
٤	اللغة الانجليزية	☐
٥	التكنلوجيا	☐
٦	التربية البيئية	☐
٧	التربية الدينية	☐
٨	التاريخ	☐
٩	الجغرافيا	☐
١٠	التربية الوطنية	☐
١١	الاقتصاد المنزلي	☐
١٢	الزراعة المبسطة	☐
١٣	البساتين	☐
١٤	الكمبيوتر	☐
١٥	الرسم الفني	☐
١٦	الطباعة	☐
١٧	التربية الفنية	☐
١٨	التربية الرياضية	☐
١٩	الكهرباء	☐
٢٠	الميكينيكا	☐

٦٥ اختر المهارات الهامة التي يجب ان يحصل عليها طالب المرحلة الثانوية قبل تخرجه من المدرسة بكتابة رقم في المربع المقابل للمهارة. الرقم (١) امام اهم مهارة , الرقم (٢) امام المهارة التي تليها في الاهمية و . واستمر على هذا المنوال حتى تصل الى المهارة الاقل اهمية.

١ مقدرات حل المشكلات والصعوبات وتبادل الافكار والاراء واتخا ذ القرار. ☐

٢ الادراك والموقف الايجابي لطرق السلامة. ☐

٣ العمل مع الاخرين. ☐

٤ المهارات الاساسية لاستعمال الالات والاجهزة اليدوية. ☐

٥ القراءة والكتابة الفنية. ☐

٦ المهارات الحسابية. ☐

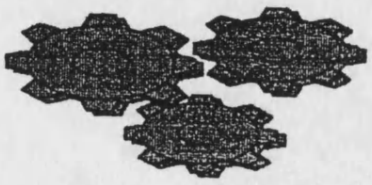
٧ المهارات المساعدة على التوظيف مثل اليقظة والانتباه والتحمل. ☐

٨ المهارات الفنية الاساسية المشتركة لمجموعة من المهن والوظائف. ☐

٩ معرفة المفاهيم الاقتصادية الاساسية. ☐

١٠ المهارات الفنية المحددة لمهنة او وظيفة واحدة. ☐

١١ الادراك والمقدرة على اختيار نوع التعليم والمهنة المناسبة. ☐



APPENDIX C

Guideline for the interview administered to parents

APPENDIX C

Guideline for the interview administered to parents

The main purposes of the interview:

A. Parents opinions about vocational and technical education at the secondary level in the Sudan.
B. Their opinions about changing secondary level education to be more vocationally and technically oriented.
C. Problems facing their children/the country.
D. Problems facing the change.
E. How to overcome the problems

1- Are technical and vocational subjects equally important as academic subjects?

YES NO

Why?

2- Is technical and vocational education seen as a second class type of education?

YES NO

Why?

If Yes

a) Is the distribution of pupils at the end of the intermediate level a reason for that?

YES NO

Explain

If Yes

APPENDIX C (continues)

b) If the system of the distribution is changed, will it make technical and vocational education more popular?

Yes No

How?

c) Is the system of the distribution of pupils to the higher education institutions is a reason for making technical and vocational education seen as a second class type of education?

Yes No

d) If technical subjects are to be used for entry to higher education will they make more students take technical and vocational subjects at the secondary level?

YES NO

Why?

3-Is there a need for changing secondary school education so that it is more technically and vocationally oriented?

YES NO

APPENDIX C (continues)

If Yes

a) What are the reasons for the change?

If No what are the reasons?

b) What is the most suitable percentage for technical and vocational education at the secondary level?

c) Is it preferable to have academic and technical streams in the same or in separate schools?

In the same school

In separate schools

Why?

APPENDIX C (continues)

4- If secondary education is changed to be more technically and vocationally oriented, what problems will be faced the implementation of the change?

a) Can these problems be solved?

YES NO

If Yes

How?

If No

How may they affect the implementation of the change?

APPENDIX C'

Guideline for the interview administered to parents (Arabic version)

APPENDIX C'

مقابلة الاباء

الاهداف:

١ اراء الاباء عن التعليم الفني والمهني في المرحلة الثانوية السودانية.

٢ اراء الاباء عن تغيير التعليم ليكون ذا توجه فني ومهني.

٣ المشكلات التي تواجه ابناءهم بصفة خاصة والقطر بصفة عامة.

٤ المشكلات التي تواجه التغيير.

٥ كيف يمكن التغلب على هذه المشكلات؟

١ هل تعتبر المواد الفنية والمهنية ذات قيمة متساوية للمواد الاكاديمية؟

١ نعم ☐

٢ لا ☐

لماذا؟

٢ هل ينظر التعليم الفني والمهني على انه تعليم من الدرجة الثانية؟

١ نعم ☐

٢ لا ☐

لماذا؟

اذا كانت الاجابة نعم,

١ هل طريقة توزيع الطلاب عقب المرحلة المتوسطة هي السبب في ذلك؟

١ نعم ☐

٢ لا ☐

وضح:

٢ اذا غيير نظام توزيع الطلاب هل سيجعل ذلك التعليم الفني والمهني محببا اكثر للطلاب؟

١ نعم ☐

٢ لا ☐

كيف؟

٣ هل طريقة توزيع الطلاب للتعليم العالي هي السبب في النظر للتعليم الفني والمهني على انه تعليم من الدرجة الثانية؟

١ نعم ☐
٢ لا ☐

٤ اذا اعتبرت المواد الفنية والمهني من المواد المنافسة للتعليم العالي, هل سيجع ذلك عددا اكبر من الطلاب يختارون المواد الفنية والمهنية في المرحلة الثانوية؟

١ نعم ☐
٢ لا ☐
لماذا

٣ هل هناك حاجة لتغيير التعليم الثانوي الحالي ليكون اكثر فنيا ومهنيا؟

١ نعم ☐
٢ لا ☐

١ اذا كانت الاجابة نعم, ما هي الاسباب الداعية للتغيير؟

اذا كانت الاجابة لا, ما هي الاسباب؟

٢ ما هي النسبة المئوية المناسبة للتعليم الفني والمهني في المرحلة الثانوية؟

٣ هل من المفضل ان يكون المساق الاكاديمي والفني في نفس المدرسة ام في مدارس منفصلة؟

١ في نفس المدرسة
٢ في مدارس منفصلة
ولماذا؟

٤ اذا حول التعليم الثانوي ليكون اكثر فنيا ومهنيا, ما هي المشكلات التي تواجه هذا التحول؟

١ هل يمكن حل هذه المشكلات؟

١ نعم ☐

٢ لا ☐

اذا كانت الاجابة نعم ,كيف؟

اذا كانت الاجابة لا, كيف يمكن ان تؤثر هذه المشكلات في تنفيذ التغيير؟

APPENDIX D

Guideline for the interview administered to the representative of the board for selecting secondary school graduates to higher education.

APPENDIX D

Guideline for the interview administered to the representative of the board for selecting secondary school graduates to higher education.

The main purposes of the interview:

A. The existing system of distribution.
B. The effects of the existing system on vocational and technical school
   graduates.
C. The possibility of changing the system?
D. How the system may be changed ?
E. The effect of the change on vocational and technical school graduates.

1- Who is mainly responsible for setting the regulations governing the distribution of secondary school graduates into higher education institutions?

2- How are secondary school graduates distributed in the post-secondary institutions?

3- Do vocational and technical school graduates have the same opportunities to enter higher education institutions?

YES NO

If Yes

How?

APPENDIX D (continues)

If No

Why?

4- Is it possible to consider vocational and technical subjects as having the same value as academic subjects for the entry to higher education?

YES NO

If Yes.

How?

If No.

Why?

5- Is it possible to establish Further Education colleges as a separate colleges in the existing universities specially for technical and vocational school graduates?

YES NO

APPENDIX D (continues)

If Yes

Why?

If No.

Why?

6- Is there a need for any change in the existing system of entry to higher education?

YES NO

If Yes.

What change?

Why?

What are implications of such changes?

How changes be brought about?

APPENDIX D'

Guideline for the interview administered to the representative of the board for selecting secondary school graduates to higher education. (Arabic version)

APPENDIX D'

مقابلة ممثل لجنة القبول للتعليم العالي

الاهداف:

١ النظام الحالي لتوزيع الطلاب للتعليم العالي.
٢ اثر النظام الحالي للتوزيع على خريجي المدارس الفنية والمهنية.
٣ مدى امكانية تغيير النظام الحالي.
٤ تأثير هذا التغيير على خريجي المدارس الفنية والمهنية.

١ من هو المسؤل اساسا عن وضع القوانين التي تحكم قبول الطلاب لمؤسسات التعليم العالي؟

٢ كيف يتم توزيع خريجي المدارس الثانوية على مؤسسات التعليم العالي؟

٣ هل لطلاب المدارس الفني والمهنية نفس الفرص لدخول مؤسسات التعليم العالي؟

١ نعم ☐
٢ لا ☐

اذا كانت الاجابة نعم, كيف ؟

اذا كانت الاجابة لا , لماذا؟

٤ هل من الممكن اعتبار المواد الفنية والمهنية ذات قيمة متساوية مع المواد الاكاديمية للقبول في التعليم العالي؟

١ نعم ☐
٢ لا ☐

اذا كانت الاجابة نعم, كيف؟

اذا كانت الاجابة لا, لماذا؟

٥ هل يمكن انشاء كليات للتعليم الاضافي في الجامعات القائمة حاليا خصيصا لخريجي المدارس الفنية والمهنية؟

١ نعم ☐
٢ لا ☐

اذا كانمت الاجابة نعم, لماذا؟

اذا كانت الاجابة لا, لماذا؟

٦ هل هناك حاجو لتغيير طريقة القبول للتعليم العالي؟

١ نعم ☐
٢ لا ☐

اذا كانت الاجابة نعم, اي تغيير؟ لماذا؟

١ ما هو أثر هذا التغيير؟

٢ كيف يمكن عمل هذا التغيير؟

APPENDIX E

Guidelines for the interview administered to the officials in the Ministry of Education.

APPENDIX E

Guidelines for the interview administered to the officials in the ministry of education.

The main purposes of the interview:

A. Their opinion about changing secondary education to be technically and vocationally oriented.
B. Reasons for change.
C. Problems facing the change.
D. Solutions of the problems.
E. Role of ministry of education in the change.

1-Is vocational and technical education equally important as academic education?

YES NO

Why?

2- Is technical and vocational education seen as a second class type of education?

YES NO

Why?

3- Is the distribution of pupils at the end of secondary school level a reason for that?

YES NO

Why?

APPENDIX E (continues)

4- If the system of the distribution is changed, will it make technical and vocational education more popular?

Yes No

5-Is there a need for changing secondary school education so that it is more technically and vocationally oriented?

YES NO

Why?

If Yes

What are the reasons for the change?

If No what are the reasons?

6- Is the comperhensive scondary school system considered the needed change?

Yes NO

Why?

APPENDIX E (continues)

7- Do you prefer that academic and TVE streams to be in the same school?

Yes NO

Why?

8- If secondary education is changed to be more technically and vocationally oriented, what problems will be faced the implementation of the change?

Is it possible to solve these problems?

Yes NO

If yes, how?

9- Is there a shortage in the skilled or semi-skilled people in the labour force?

YES NO

If Yes

Is the existing secondary school system is a cause of the shortage?

YES NO

If Yes.

How?

APPENDIX E (continues)

If No

What are the causes of this shortage.

10- How do vocational and technical students at the secondary level be vocationally trained?

By having:

A. a basic skills in the school and then to have a specific training in the work place.

B. academic education in the school and full training in the work place.

C. a full training in the school.

D. a full training with cooperation between school and work place.

11-Will the economic condition of the Sudan make it difficult to change the secondary education to be more technically and vocationally oriented?

YES NO

12- How can vocational and technical education be financed?

13- Is the implementation of comperhensive school system the solution of secondary education problems?

Yes No

If Yes, How?

APPENDIX E'

Guidelines for the interview administered to the officials in the Ministry of Education. (Arabic version)

APPENDIX E'

مقابلة المسؤلين بوزارة التربية و التعليم

الاهداف:

١ اراء المسؤلين بوزارة التربية والتعليم عن التعليم الفني.

٢ اراؤهم عن تغيير التعليم الثانوي ليكون ذا توجه فني ومهني.

٣ المشكلات التي تواجه هذا التغيير.

٤ كيفية حل هذه المشكلات.

١ هل تتساوى المواد الفنية فى الأهمية مع المواد الأكاديمية؟

١ نعم ☐

٢ لا ☐

لماذا؟_____

٢ هل ينظر للتعليم الفنى والمهنى كتعليم من الدرجة الثانية؟

١ نعم ☐

٢ لا ☐

لماذا؟_____

٣ هل لطريقة توزيع الطلاب عقب المرحلة الثانوية أثر فى ذلك ؟

١ نعم ☐

٢ لا ☐

لماذا؟_____

٤ اذا غييرت طريقة توزيع الطلاب عقب المرحلة الثانوية هل سيختار عدد أكبر من الطلاب المساق الفنى؟

١ نعم ☐
٢ لا ☐

٥ هل هناك حاجة لتغيير التعليم الثانوى ليكون أكثر فنيا ؟

١ نعم ☐
٢ لا ☐

لماذا؟_____

اذا كانت الاجابة نعم. ما هى الأسباب؟

اذا كانت الاجابة لا. ما هى الأسباب؟

٦ هل يعتبر نظام المدرسة الشاملة هو التغيير المطلوب؟

١ نعم ☐
٢ لا ☐

لماذا؟_____

٧ هل تحبذ أن يكون المساق الفنى والأكاديمى فى نفس المدرسة؟

١ نعم ☐
٢ لا ☐

لماذا؟_____

٨ اذا حول التعليم الثانوى ليكون أكثر فنيا ما هي المشكلات التى قد تعترض نجاح هذا التغيير؟
هل يمكن حل هذه المشكلات؟

١ نعم ☐
٢ لا ☐

أذا كانت الاجابة نعم. كيف؟

٩ هل هناك نقص فى العمالة ىاماهرة وشبه الماهرة فى سوق العمالة السودانية؟

١ نعم ☐
٢ لا ☐

اذا كانت الاجابة نعم , هل نظام التعليم الثانوي سبب ذلك النقص؟

١ نعم ☐
٢ لا ☐

اذا كانت الاجابة نعم. كيف؟

اذا كانت الاجابة لا, ما هى أسباب نقص العمالة الماهرة وشبه الماهرة؟

١٠ كيف يمكن تدريب طلاب المساق الفنى؟

اختر ما تراه مناسبا مما يأتى:
بالحصول على
١ المهارات الأساسية فى المدرسة ومن ثم الحصول على التدريب الكامل فى مكان العمل.
٢ الدراسة الأكاديمية فى المدرسة والتدريب فى مكان العمل.
٣ التدريب الكامل فى المدرسة.
٤ التدريب الكامل بالتعاون بين المدرسة ومكان العمل.

١١ هل ستحول الامكانيات الاقتصادية من نجاح تغيير التعليم الثانوى ليكون أكثرفنيا؟

١ نعم ☐
٢ لا ☐

١٢ كيف يمكن الصرف على ادخال المواد الفنية في منهج المدرس الشاملة؟

_____

١٣ هل اختيار نظام المدرسة الشاملة هو الحل لمشاكل التعليم الثانوية؟

١ نعم ☐
٢ لا ☐

اذا كانت الاجابة نعم, كيف؟

اما كان الاحسن تركيز الصرف على المدارس الفنية القائمة بدلا من توزيع الجهود على كل المدارس؟

١ نعم ☐
٢ لا ☐

لماذا؟_____

لك الشكر على تعاونك

APPENDIX F

Letters to and from the Ministry of Education and UNESCO

بسم الله الرحمن الرحيم

وزارة التربية والتعليم

وكالة التعليم الفنى

التاريخ : ٢٤/٧/١٩٩١م النمره ونت/تف/٥٠/ب/ ٨

السيد / عبد الرحمن احمد عبد الله

مبعوث جامعة السودان للعلوم

والتكنولوجيه

جامعة باث ـ المملكه المتحده

الموضوع : إذن باجراء بحث عن التعليم الفنى

والمهنى فى المرحلة الثانوية السودانية

تحية طيبة مباركة باذن الله ،

وصلنى خطابك المؤرخ ٢٠/٧/١٩٩١ تطلبون فيه السماح لكم باجراء البحث أعلاه .

ويسرنى ان أزف اليك موافقتنا التامة واستعدادنا لتقديم كافة المساعدات لبلوغ هذا الهدف السامى . ويقينى ان كل دلو فى هذا المجال يدفع مسيرتنا للامام لامحال .

ستكون دعواتنا لكم بالتوفيق والسداد .

ولك موصول الود ،،،

امين محمد امين سوركتى

نائب الوكيل

منجده////

جمهورية السودان

وزارة التربية والتعليم

٢٤ يوليو ١٩٩١

وكالة التعليم الفنى

APPENDIX F (continues)

united nations educational, scientific and cultural organization
organisation des nations unies pour l'éducation, la science et la culture

7, place de Fontenoy, 75700 Paris
1, rue Miollis, 75015 Paris

téléphone : national (1) 45.68.10.00
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270602 Paris
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référence :

EDV/TVE/91.314

30 August 1991

Dear Mr. Abdalla,

Thank you for your recent letter requesting information which may help you in your research in the field of technical and vocational education at the secondary level.

Unfortunately, we have no documentation specifically concerning the Sudan but I take pleasure in sending you copies of the following documents:

The Revised Recommendation concerning Technical and Vocational Education;

The Convention on Technical and Vocational Education

Final Report of the International Congress for the Improvement and Development of Technical and Vocational Education (Berlin, GDR, 1987)

Report of UNESCO International Symposium on Innovative Methods of Technical and Vocational Education (Hamburg, June 1989)

which I trust will be of assistance to you.

Yours sincerely,

F. Luqman
Chief,
Section for Technical and Vocational Education
Division for the Development of Education

Mr. Abdelrahman Ahmed ABDALLA
School of Education
University of Bath
Claverton Down
Bath BA2 7AY
UNITED KINGDOM

APPENDIX F

بسم الله الرحمن الرحيم

وزارة التربيه والتعليم

وكالة التعليم الفنى

التاريخ ١٩/٩/١٩٦٢م النمره /وت/تف/١٢/أ/١

السيد /منسق التعليم الفنى بولاية ــــــــ

"السلام عليكم ورحمه الله وبركاته"

يعلمكم الأستاذ / عبدالرحمن أحمد عبدالله والذى يقوم بعمل بحث عن ادخال التعليم الفنى فى المدارس الاكاديميه وهو يحتاج الى بعض المعلومات من المدارس الفنيه التابعه لكم.

أرجو التكرم بتقديم المساعدة اللازمه.

"ولكم جزيل الشكر والتقدير"

أمين محمد امين سورتى

نائب وكيل التعليم الفنى

جمهورية السودان
وزارة التربية والتعليم
وكالة التعليم الفنى

مواهب

APPENDIX G (continues)

TEACHERS' VIEW SCALE ITEM ANALYSIS

ITEM-TOTAL STATISTICS

VARIABLES	SCALE MEAN IF ITEM DELETED	SCALE VARIANCE IF ITEM DELETED	CORRECTED ITEM-TOTAL CORRELATION	ALPHA IF ITEM DELETED
11	77.65	86.49	0.38	0.83
13	77.31	88.02	0.41	0.83
20	77.59	86.55	0.41	0.83
21	77.75	86.95	0.37	0.83
23	77.18	89.22	0.39	0.83
24	77.23	86.62	0.52	0.83
26	77.49	88.98	0.31	0.83
27	77.43	87.45	0.42	0.83
28	77.51	84.12	0.47	0.83
31	77.58	87.60	0.28	0.84
32	77.36	83.84	0.55	0.82
35	77.51	82.88	0.55	0.82
40	77.74	88.18	0.29	0.84
54	77.56	85.69	0.42	0.83
56	77.41	85.59	0.47	0.83
59	77.60	87.43	0.42	0.83
60	77.78	83.40	0.50	0.83
63	77.75	85.48	0.40	0.83
65	77.60	88.08	0.31	0.84
67	77.69	85.64	0.47	0.83